

Comments on the 22 June 2018 En Banc

ENERGY RISK MANAGEMENT POLICIES OF COMMUNITY CHOICE AGENCIES

11 JULY 2018



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At the En Banc hearing on 22 June 2018, the Commission requested clarification regarding Community Choice Aggregation (CCA) agency Energy Risk Management policies (ERMP).

With the caveat that this may not be a comprehensive or current account, the following CCAs have adopted Energy Risk Management Policies on the dates listed below. For the Commission's reference, I have included a representative CCA staff memo and Risk Management Committee presentation as well as the CCA ERMPs in these comments:

1. July 2018 — Clean Power Alliance of Southern California (*refer to page 116 of these comments*)
2. May 2018 — Desert Community Energy (*refer to page 160*)
3. May 2018 — San Jose Community Energy (*refer to page 185*)
4. April 2018 — MCE Clean Energy (*refer to page 195*)
5. March 2018 — Valley Electric Authority (*refer to page 208*)
6. February 2018 — East Bay Community Energy (*refer to page 42*)
7. February 2018 — Monterey Bay Community Energy (*refer to page 217*)
8. November 2017 — Pioneer Community Energy (*refer to page 242*)
9. May 2017 — Silicon Valley Clean Energy (*refer to page 268*)
10. December 2016 — Redwood Coast Energy Authority (*refer to page 284*)
11. October 2016 — Peninsula Clean Energy (*refer to page 309*)
12. January 2015 — Sonoma Clean Power (*refer to page 318*)

Please also note that these ERMPs may not be the most current version in use by each CCA agency. As context:

1. The CCA industry began evolving ERM practices in a rapid fashion over the course of 2017-18. The largest agencies are now drafting ERMPs and forming Risk Committees prior to or soon after launch, procuring diversified energy portfolios, and employing sophisticated utility-grade analytics to see over-the-horizon on sources of risk as regulatory rules and market dynamics shift;
2. With the acceleration of these more advanced "CCA 2.0" business models, CCAs have begun:
 - Hiring former IOU staff and other accomplished industry professionals with expertise in Energy Risk Management, Distributed Energy Resources and data analytics;
 - Collaborating with IOUs on the joint procurement and active management of DERs and microgrids for reliability purposes, Non-Wires Alternatives (NWAs) and the replacement of fossil-fuel peaker plants.
3. The next phase of evolution in the CCA industry is centered on expanding joint-action activities, as individual agencies cooperate together under the "CCA 3.0" framework by establishing a "Super JPA" to provide pooled procurement, coordination in planning and rate-setting, sophisticated services and shared staff resources at an advantageous economy-of-scale.

For further details, please refer to my comments submitted in response to the draft "Green Book".¹

Samuel Golding
President of Community Choice Partners, Inc.

¹Available online: [http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/Community%20Choice%20Partners_DraftGreenBookComments.pdf]



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Representative CCA Staff Memo & Risk Committee Presentation





Staff Report – Agenda Item 7

To: Clean Power Alliance (CPA) Board of Directors

From: Matt Langer, Chief Operating Officer
Natasha Keefer, Director of Power Planning & Procurement

Approved By: Ted Bardacke, Executive Director

Subject: Approval of the Energy Risk Management Policy (ERMP) and Resolution 18-009 Delegating Procurement Authority to the Executive Director pursuant to the ERMP

Date: July 12, 2018

RECOMMENDATIONS

Approve adoption of the CPA Energy Risk Management Policy (ERMP). Adopt Resolution 18-009 delegating procurement authority to the Executive Director, in consultation with the Risk Management Team, pursuant to the ERMP.

BACKGROUND

Over the course of the next two fiscal years, CPA expects to purchase over \$1 billion of energy products to serve its growing customer base. In order to do this in a prudent and organized fashion, CPA needs to establish an ERMP that governs the framework by which the Board, staff, and consultants will conduct power procurement and related business activities. The ERMP is supplemented by an Energy Risk Hedging Strategy, which establishes the minimum and maximum procurement amounts CPA will undertake for various energy products. The FY18-19 Procurement Schedule describes the timing of the various procurement activities necessary to meet the needs of CPA's customers while remaining in compliance with the ERMP.

The ERMP partially amends and supersedes the Executive Director's existing procurement authority previously delegated by the Board (through Resolution 18-006, adopted on April 5, 2018) with a more robust procurement authority framework. The Board, by adopting the ERMP, sets limits on the Executive Director's procurement authority related to transaction execution, counterparty credit, annual hedging targets, and approved transaction types. The Board may also grant the Executive Director procurement authority outside of these documents for particular program needs.

ERMP – KEY ELEMENTS

CPA exists to supply energy for the benefit of its customers. CPA recognizes that certain risks are incidental to normal power supply operations and hedging activities. The purpose of the ERMP is to provide CPA with a framework to identify, monitor, and manage risks for operating in wholesale energy markets.

In developing the ERMP, staff and its Portfolio Manager, The Energy Authority (TEA), reviewed a wide range of risk management policy styles adopted by other Community Choice Aggregators (CCAs) and Load Serving Entities (LSEs), in particular a very recent risk management policy adopted by East Bay Community Energy and the long-standing one in place at Northern California Power Agency (NCPA). CPA's ERMP addresses high-level risk management principles, robust operational controls and conduct, risk measurement and reporting, and other risk management best practices.

Risk Overview

The ERMP describes a number of risks that must be managed to ensure the success of CPA. These include:

- Opt-out Risk
- Market Risk
- Regulatory and Legislative Risk
- Volumetric Risk
- Model Risk
- Operational Risk

- Counterparty Credit Risk
- Reputation Risk

Some of these risks are easily quantified, while others are qualitative in nature. By explicitly laying out these risks, staff and the Board can more effectively manage them.

Business Practices

The ERMP lays out a number of business practices that CPA should follow. These include adherence to all applicable laws and regulations, controls around adding new transaction types, establishing a system of record for transactions, and valuation and trading practices. Together, these practices provide a strong foundation for risk management across CPA's various procurement and portfolio management activities.

Organizational Structure

Effective internal controls require an appropriate separation of duties between various functions. The ERMP outlines a separation of duties between the front, middle and back office functions. The front office, managed by the CPA Director of Power Planning & Procurement and staffed by TEA, is responsible for trading and other transactions. The middle office, overseen by the CPA Chief Operating Officer, is tasked with risk management. The back office, overseen by the CPA Director of Power Planning & Procurement and staffed by a separate team at TEA, manages payments and contract administration. As CPA adds staff, some of the back-office functions may be moved under the oversight of a Chief Financial Officer or Finance Manager.

Staff Risk Management Team

As reflected in the ERMP, it is common practice for CCA Executive Directors to seek counsel from a Risk Management Team (RMT) in implementing the Board's risk management policies. The creation of an RMT, as described in the ERMP, ensures the Executive Director has an organized framework to assess risk prior to making procurement decisions.

Delegation of Authority

The ERMP outlines certain delegation of authority to CPA staff. The ERMP specifically delegates short-term transaction execution authority to the Executive Director within limits set by the Board. Specifically, in calendar year 2019, the ERMP would authorize the Executive Director to execute transactions with a cumulative value up to \$25 million, provided that no individual transaction exceeds \$5 million or one year in duration. The Executive Director, in consultation with the RMT, would be granted additional authority up to the limits specified in the ERMP such that CPA is able to fill open positions in a timely manner. Any transactions outside of the authority delegated to the Executive Director, in consultation with the RMT, would be subject to approval by the Board.

These limits are consistent with those adopted by other CCAs, including East Bay Community Energy which adopted its ERMP earlier this year. Many CCAs delegate full authority to their Executive Director to execute short-term transactions to meet their customers' energy capacity needs. CPA's ERMP is relatively conservative in this respect, since the Executive Director's authority is limited and RMT consultation is required for larger transactions.

The ERMP is designed to incorporate CPA's long-term compliance requirements. However, long-term procurement, defined as greater than 5-year contract terms, is subject to approval by the Board.

Through approval of Resolution 18-009, the Board delegates the authority as described in the ERMP.

Energy Risk Hedging Strategy

Appendix B of the ERMP is the Energy Risk Hedging Strategy (Hedging Strategy). The Hedging Strategy describes the strategy and framework that CPA will use to hedge the power supply requirements of its customers during the prompt (i.e. the year after the current) calendar year plus the following four calendar years. Specific focus is on procurement of the following products:

- Fixed Priced Energy
- Portfolio Content Category 1 (PCC1) Renewable Energy¹
- Portfolio Content Category 2 (PCC2) Renewable Energy²
- Carbon Free Energy
- Resource Adequacy Capacity

Hedge Schedule Ranges

Annual hedging minimums and maximums are specified in the Hedging Strategy, but generally the Hedging Strategy calls for CPA to hedge a large portion of its exposure for the prompt (i.e. the month after the current) month and prompt year, with a declining range of hedge values in successive years. The ranges are provided to allow for flexibility in responding to market conditions while providing prudent limits on procurement authority. Any proposed deviations from the Hedging Strategy would be brought to the Board for consideration.

Impact of Long-Term RPS Procurement on Hedging

An important aspect of the Hedging Strategy is that it accounts for the long-term RPS procurement requirements contained within SB 350. Specifically, starting in 2021, 65% of the portion of RPS energy CPA procures for compliance purposes must come from contracts of ten years or greater in length. This mandate is reflected in the Hedging Strategy by increasing the minimum hedges for PCC1 procurement, beginning in 2021. Additionally, the Hedging Strategy accounts for the fact that long-term PCC1 contracts include energy deliveries, and sometimes Resource Adequacy, that act as a hedge and are accounted for as such in the hedge calculations. This is why the Fixed Price Energy hedge is set at a maximum of 40% in the fourth and fifth years of the hedge schedule.

¹ Renewable energy that can either be directly delivered to the CAISO grid or delivered from outside of California without electricity from a substitute source.

² Renewable energy that cannot be delivered to the CAISO grid without a substitute electricity source.

Future Changes to the ERMP

The various limits set by the ERMP are based on best practices but may need to change as CPA develops further operational experience and/or expands its service territory. The ERMP takes into account setting different limits for 2019, in which CPA is still commencing service to members, and for 2020 and beyond, when CPA is in steady-state operations. Transaction volumes will rapidly increase as CPA becomes fully-implemented and there may be a need for additional formal delegation to staff to ensure operational flexibility. The ERMP may also need to be amended based on new market or regulatory conditions. The Executive Director is responsible for keeping the Board abreast of changes impacting CPA's risk profile or the applicability of the ERMP.

FY18-19 PROCUREMENT SCHEDULE – KEY ELEMENTS

The FY18-19 Procurement Schedule reflects procurement activities consistent with the limits established in the ERMP. The Procurement Schedule also discusses a long-term procurement solicitation, which staff intends to bring back to the Board for a more detailed discussion about goals and targets at the August 2018 meeting. A high-level summary of FY 18-19 procurement activities is as follows:

- July 2018
 - 2018 balance of year PCC2 solicitation (already in progress)
 - 2018-2021 RA solicitation
- August 2018
 - Short-term solicitation for PCC1, PCC2 and carbon free energy
- September 2018
 - Long-term solicitation for PCC1, PCC2 and carbon free energy (subject to further input from the Board at its August meeting)
- May 2019
 - Long-term solicitation for PCC1, PCC2 and carbon free energy (subject to further input from the Board prior to launch)
- June 2019
 - 2019-2022 RA solicitation
- Ongoing

- Procurement to meet near-term open positions either bilaterally or through short-term solicitations

The FY18-19 Procurement Schedule is subject to change as market conditions dictate. Material changes to the approved schedule will be presented to the Board.

Attachments: CPA Energy Risk Management Policy

CPA FY18-19 Procurement Schedule

Resolution 18-009 Delegating Procurement Authority to the Executive Director pursuant to the ERMP



Redwood Coast Energy Authority

Risk Management Team Meeting

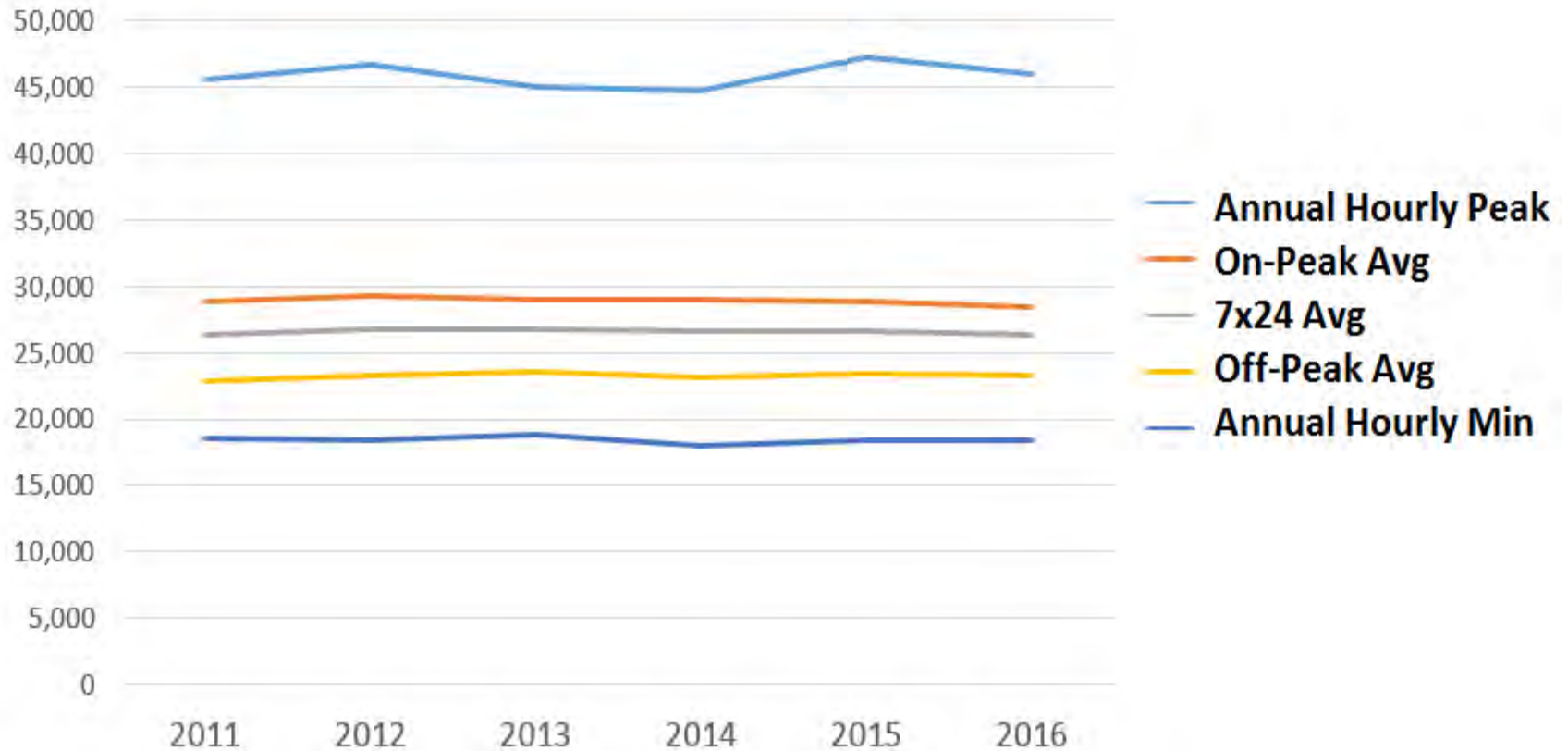
March 21, 2017

Discussion Topics

- Market fundamentals
- 2017 financial outlook
- Procurement status and next steps
- Possible “Deep Dive” discussion topics

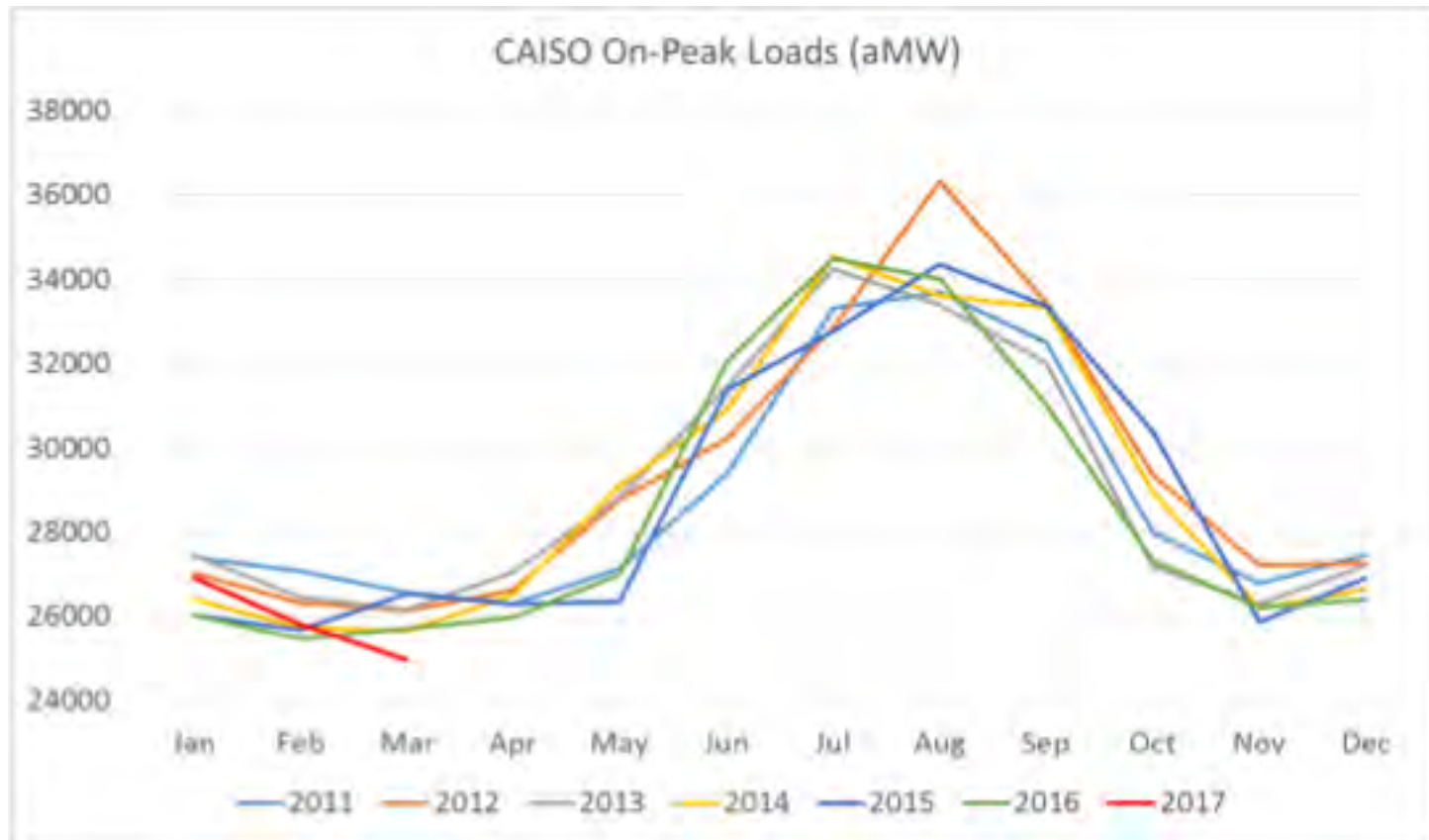
Market Fundamentals

CAISO Demand



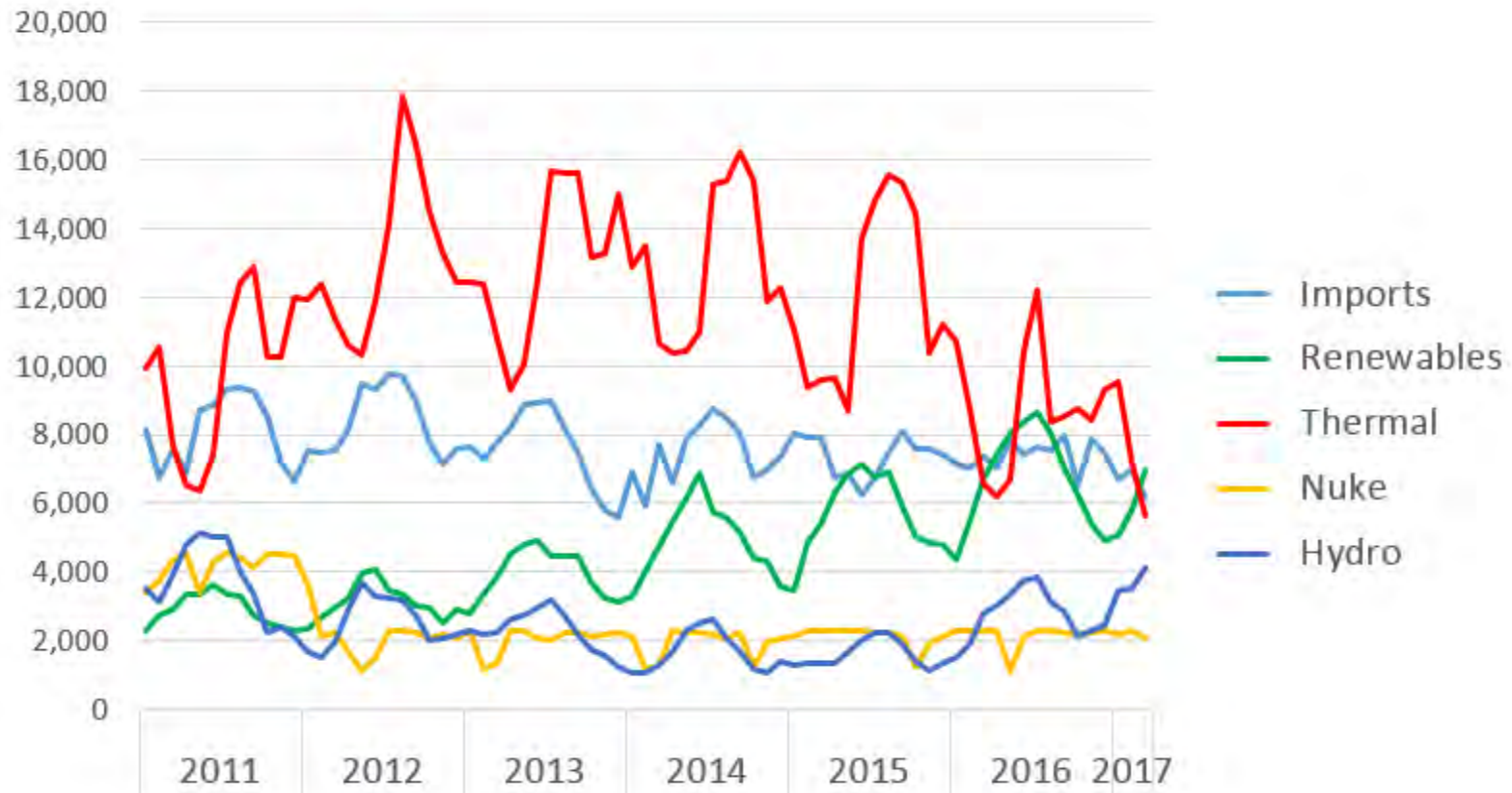
- A very “flat” story

CAISO Demand by season



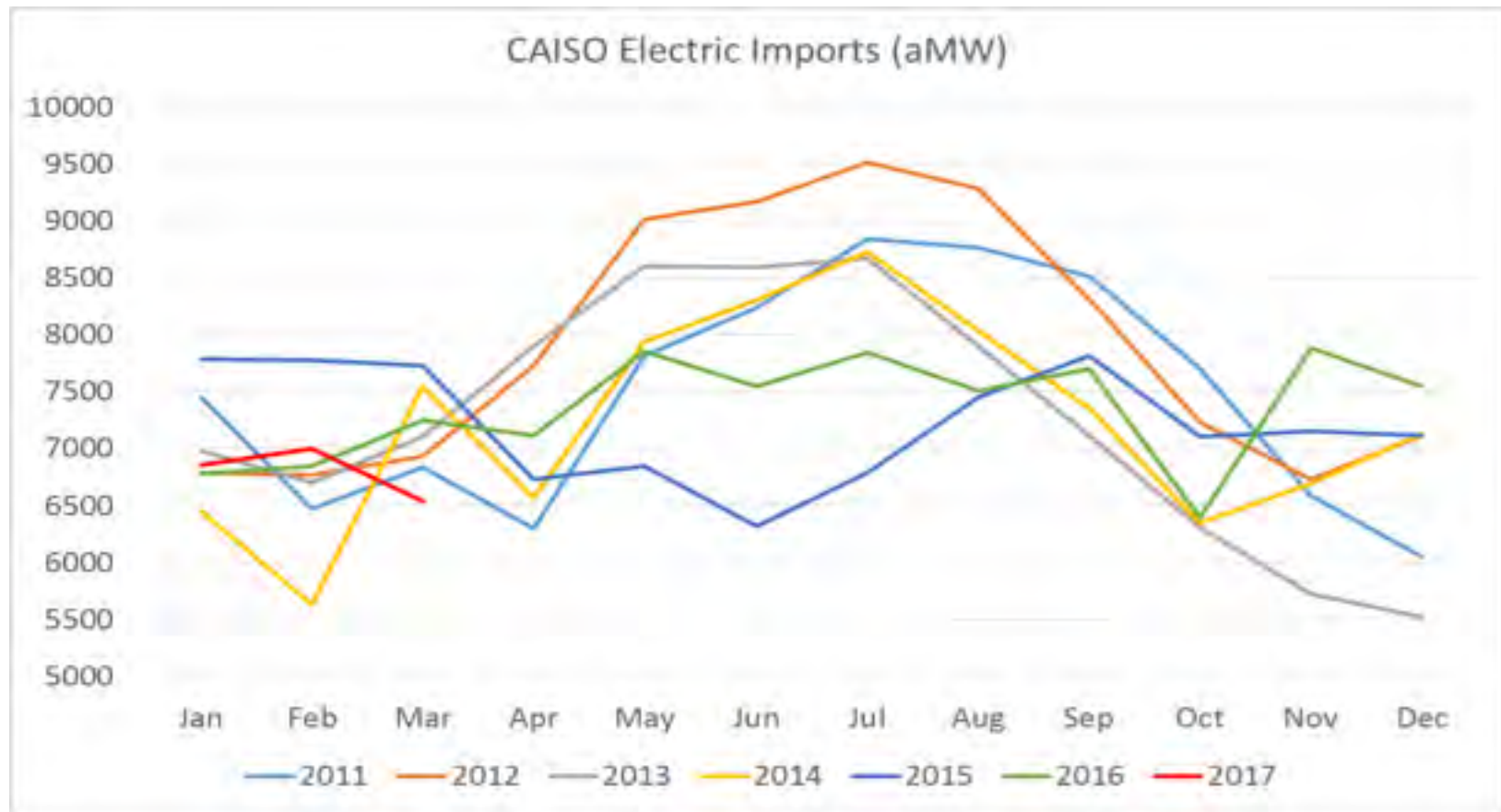
- Summer peaking loads

CAISO Supply



- Thermal generation losing market share to renewables

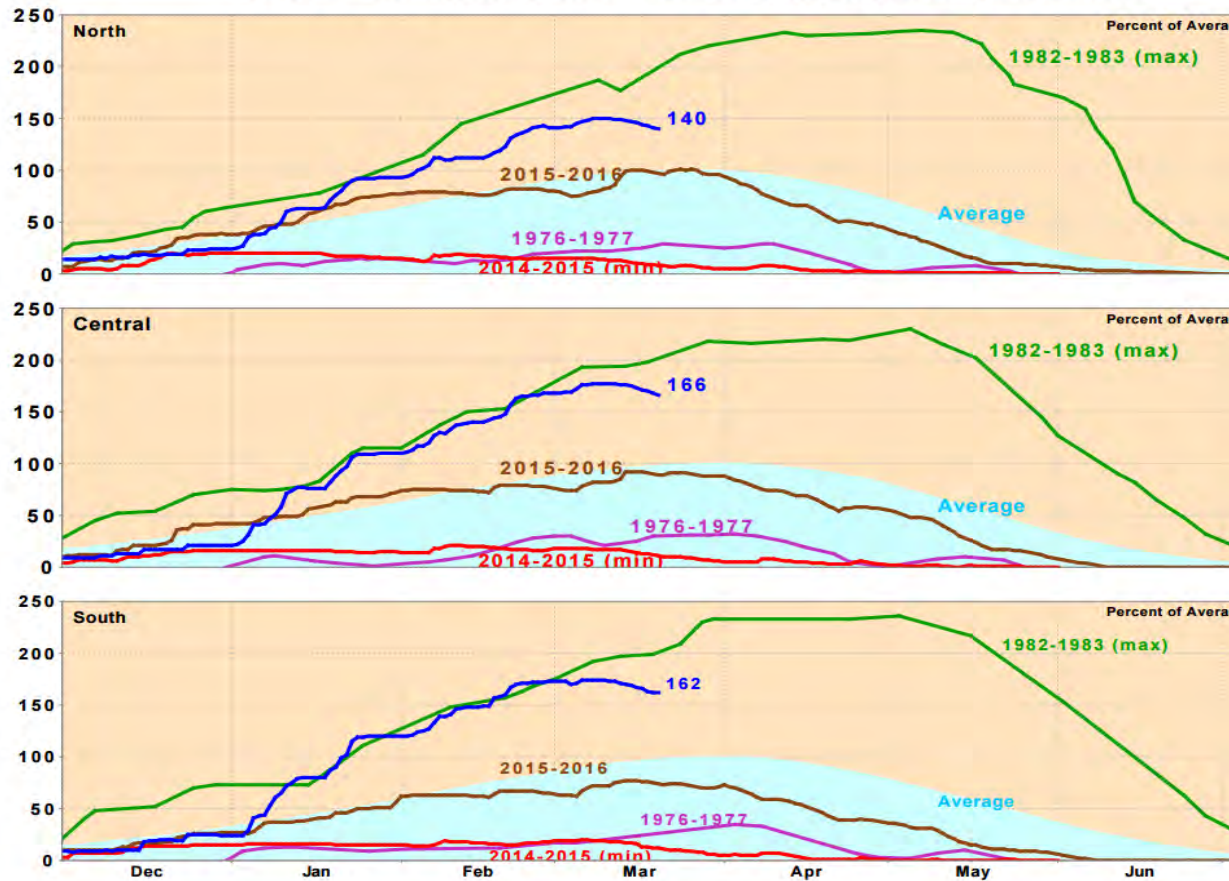
CAISO Imports



- Tend to follow CAISO's demand profile; can be impacted by PacNW hydro

California Snowpack

California Snow Water Content, March 20, 2017, Percent of April 1 Average



Data For: 20-Mar-2017

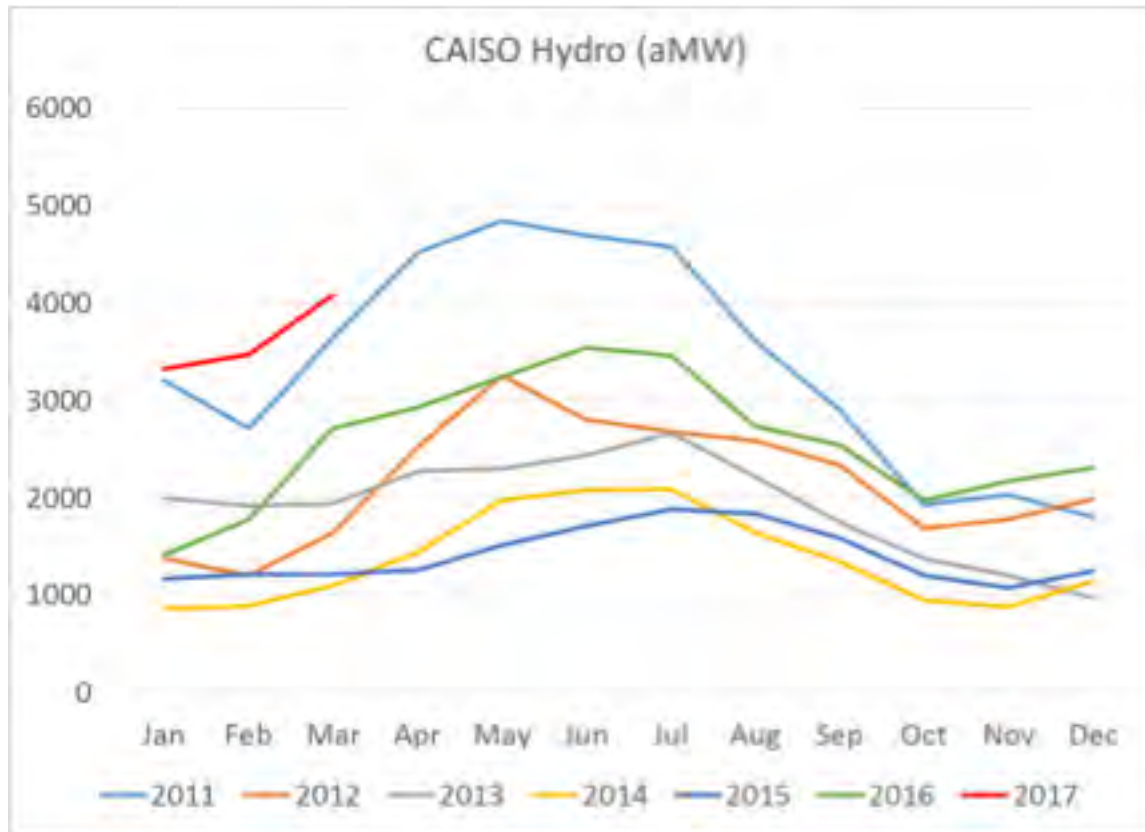
% Apr 1 Avg. / % Normal for this Date



Statewide Percent of April 1: 157%

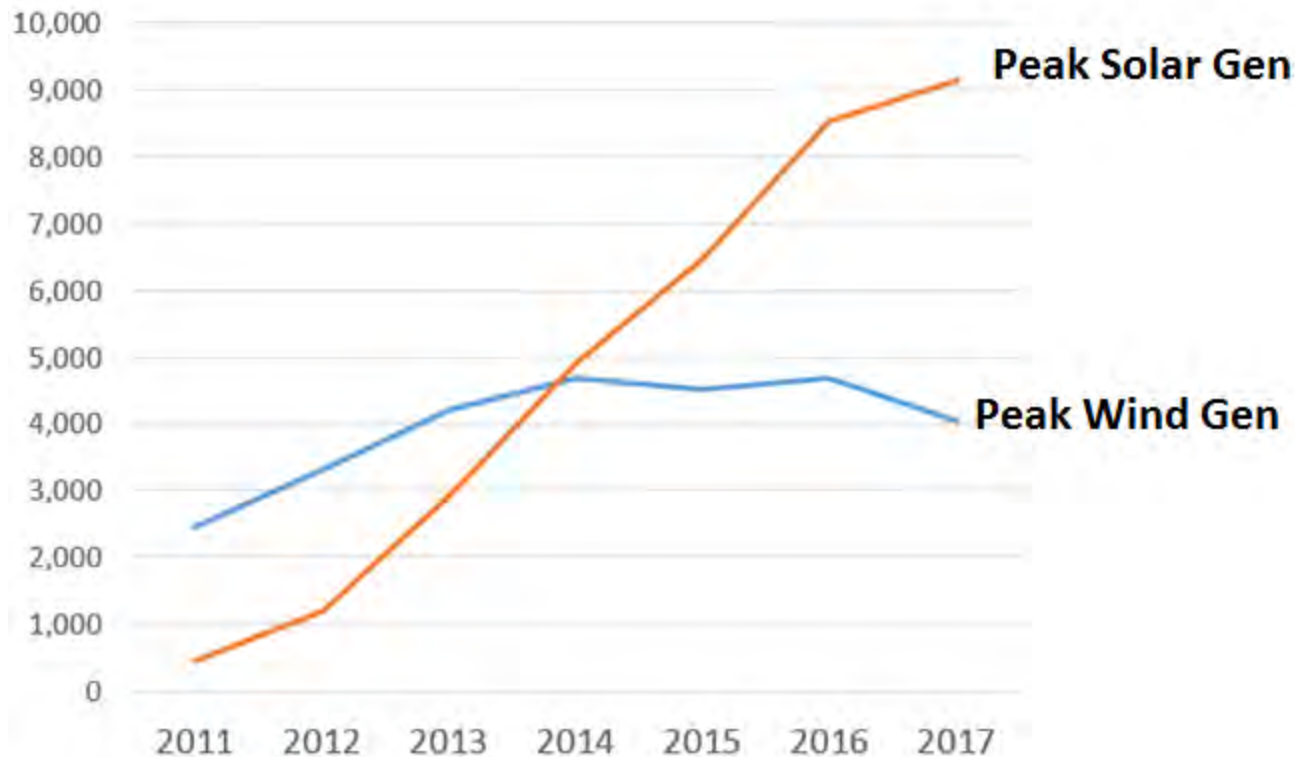
Statewide Percent of Average for Date: 159%

Hydro Generation



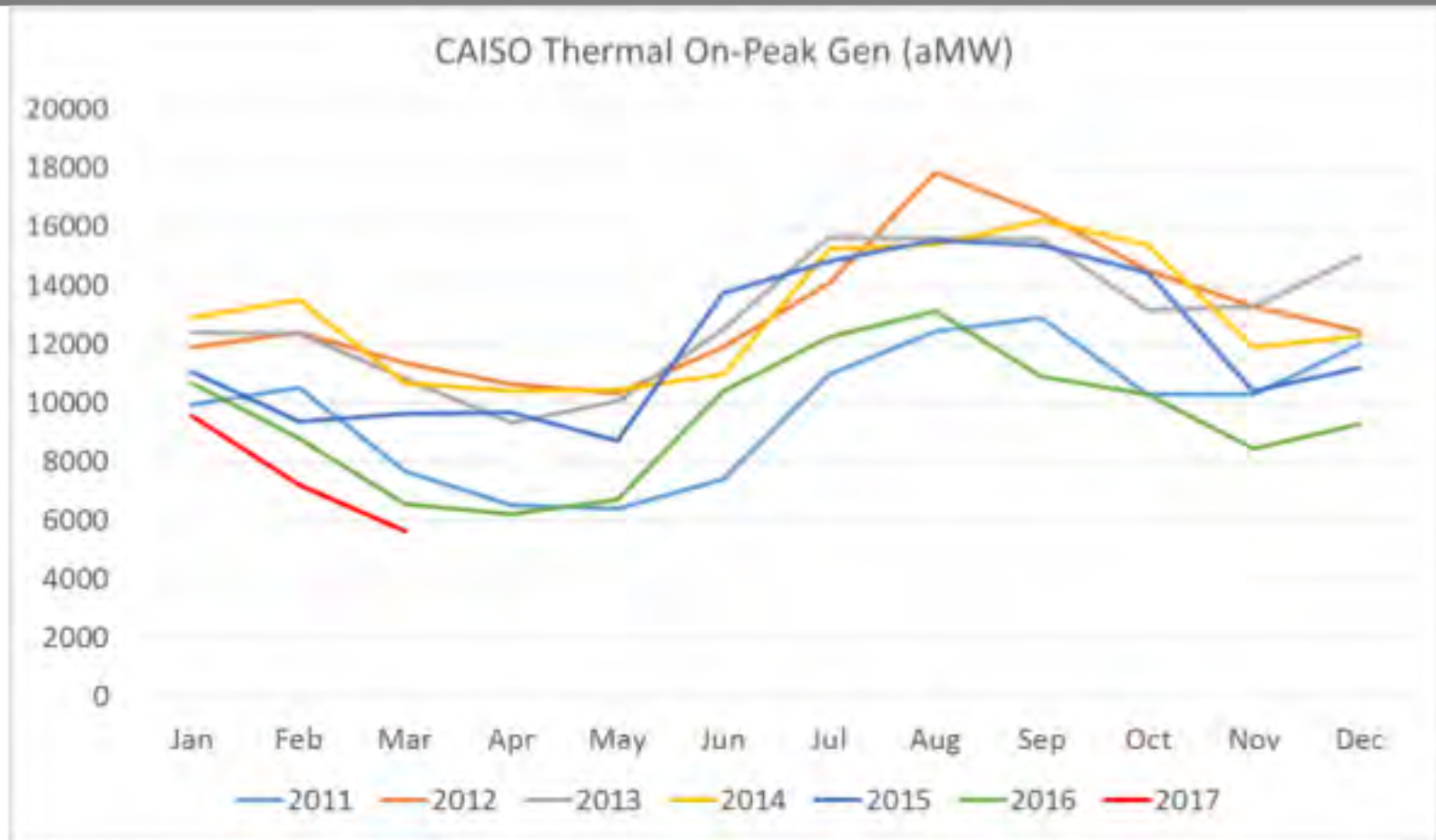
- 2011 Hydro a decent proxy for remainder of 2017

Increasing Renewables



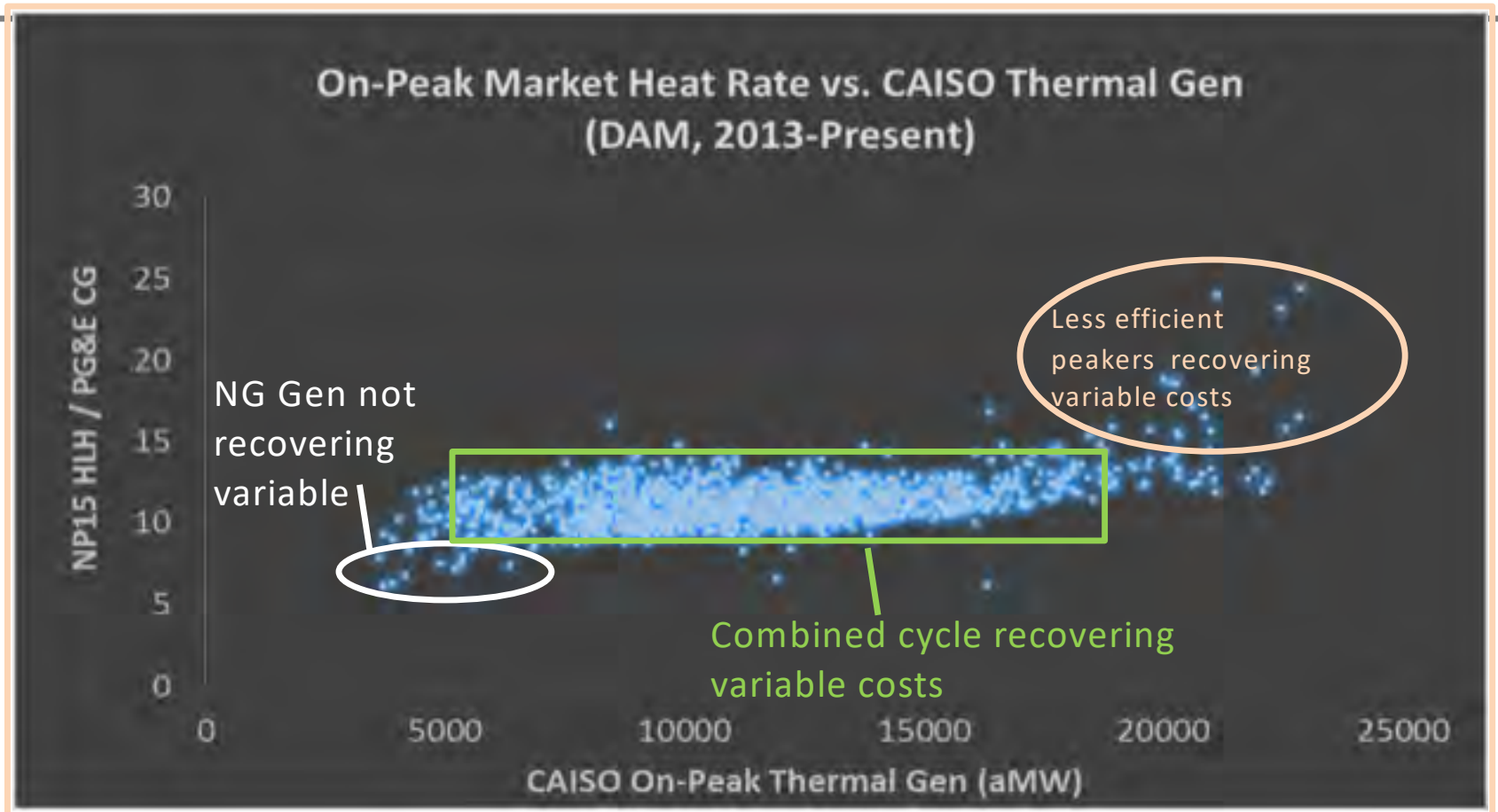
- CAISO utility scale stats (does not include distributed generation)

Thermal



- Losing market share

Market Heat Rate



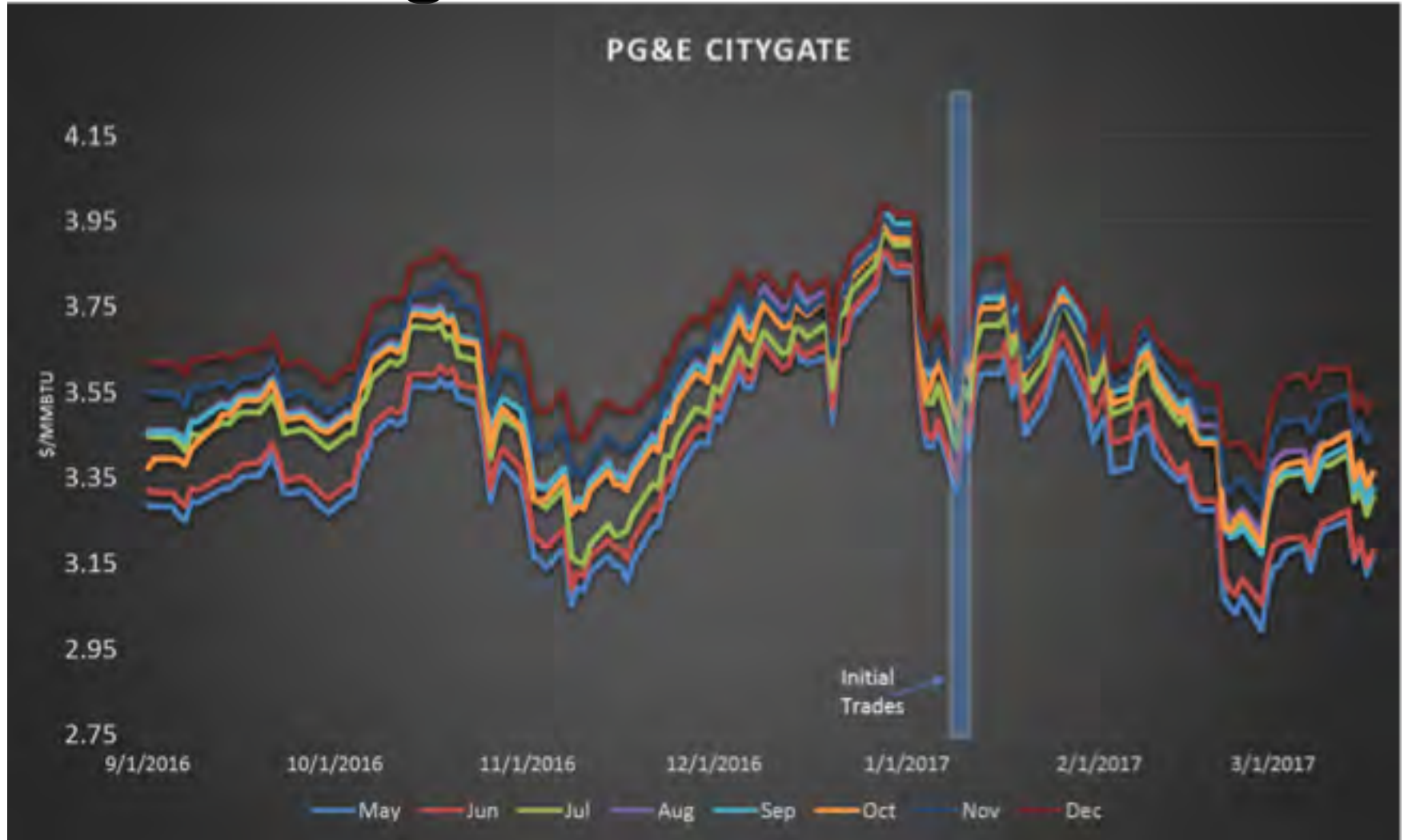
- Market Heat Rate increases with the call on natural gas fired generation

Henry Hub Prompt Month Natural Gas

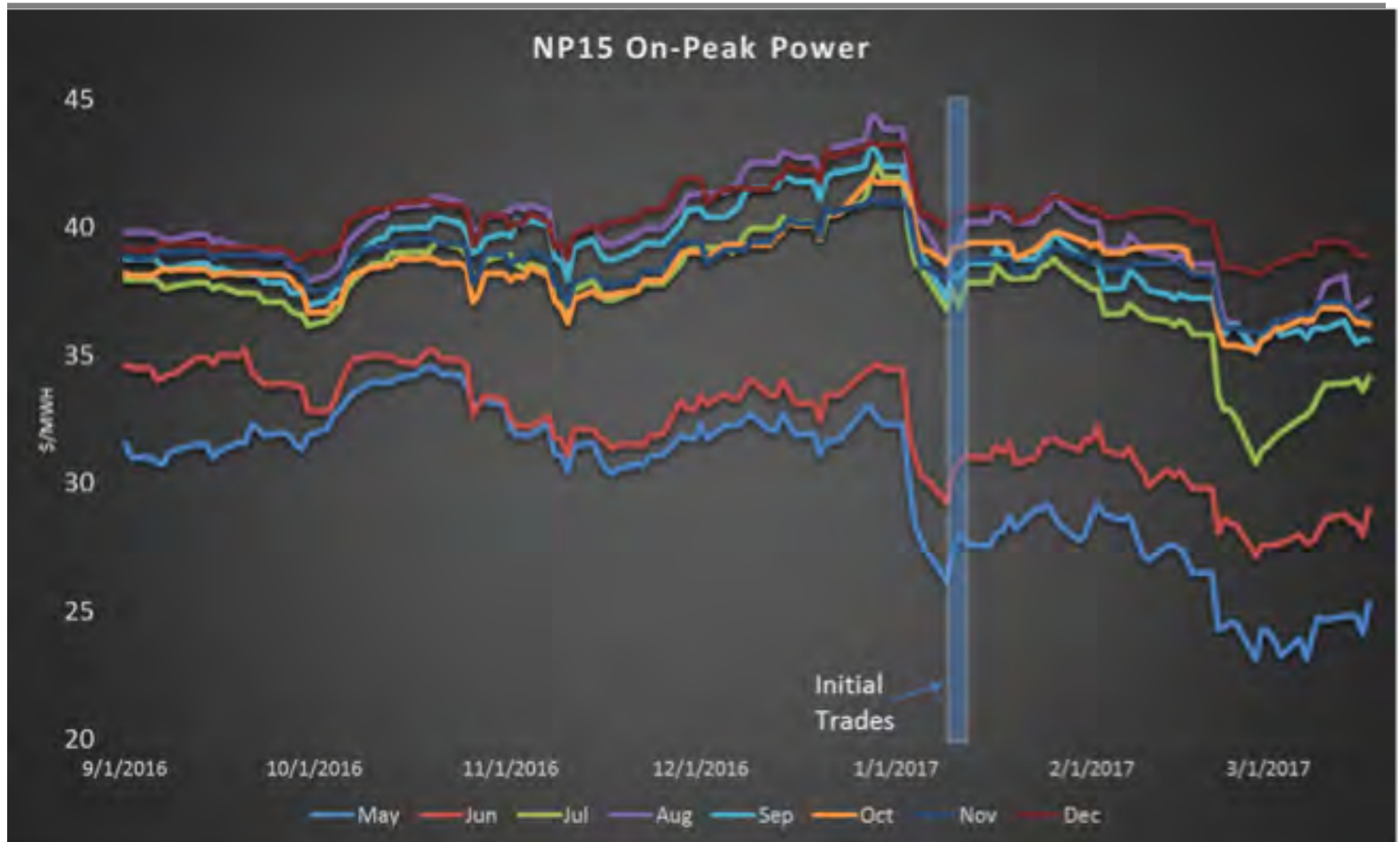


- Natural gas pricing – a wild ride since November

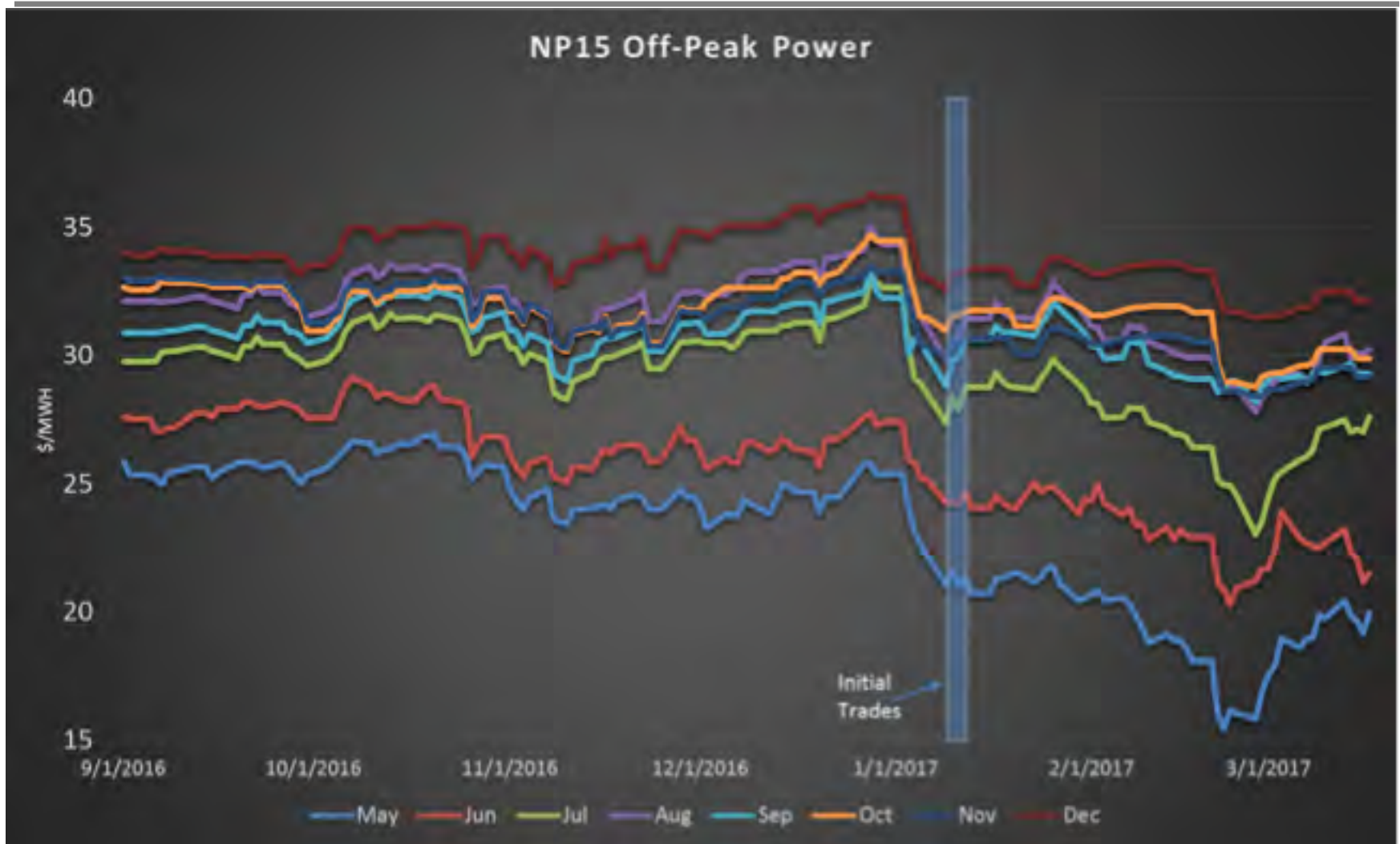
Regional Natural Gas



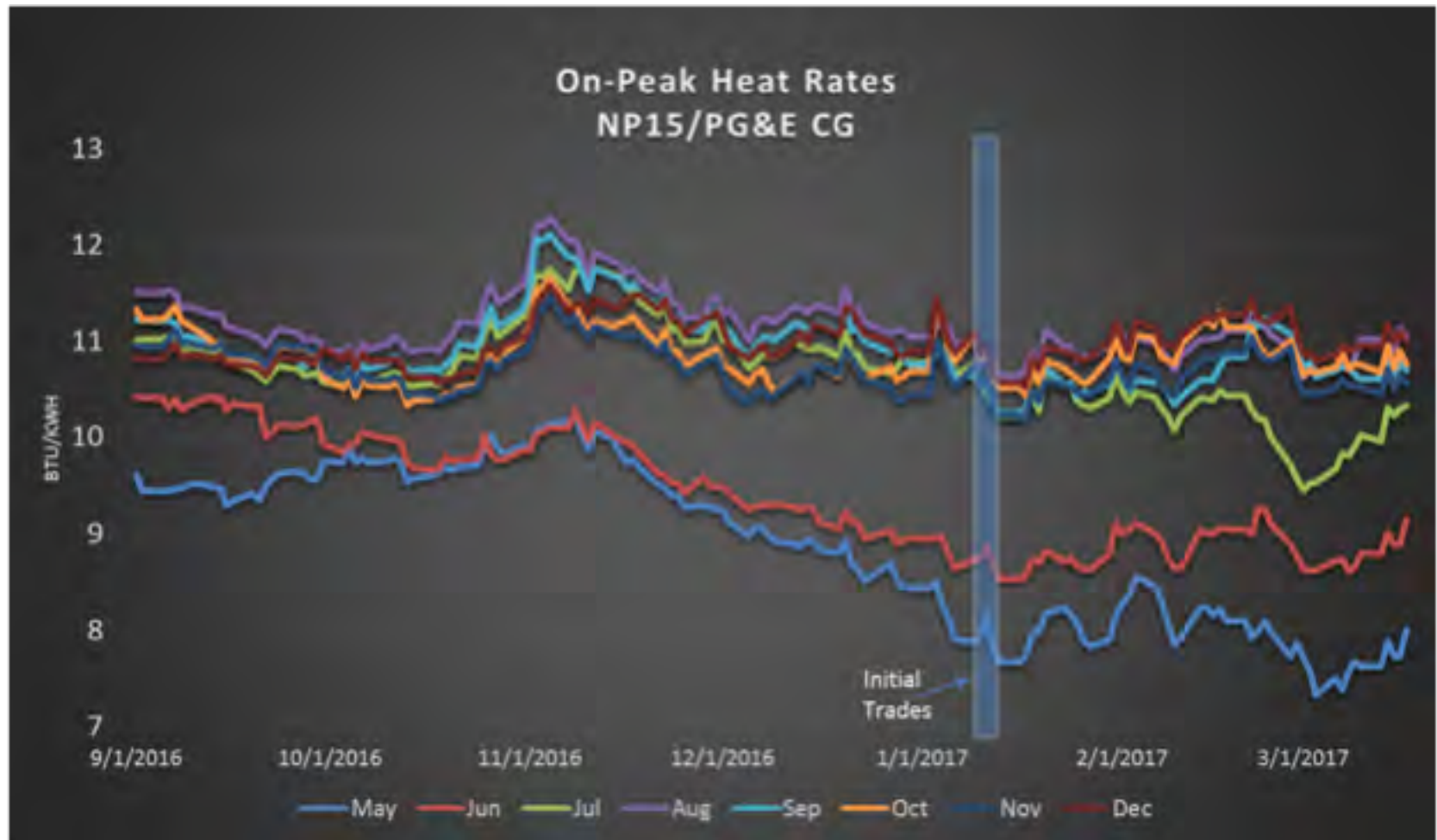
Forward On-Peak Power



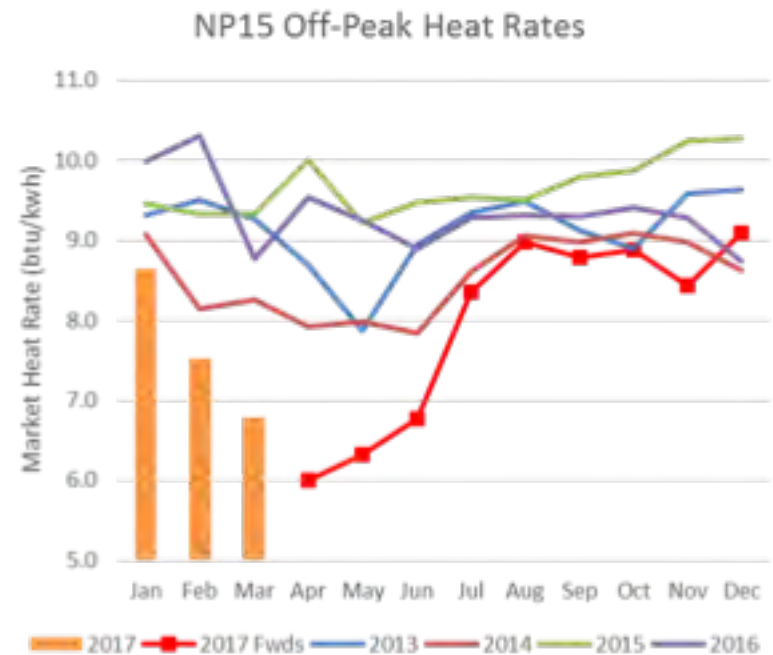
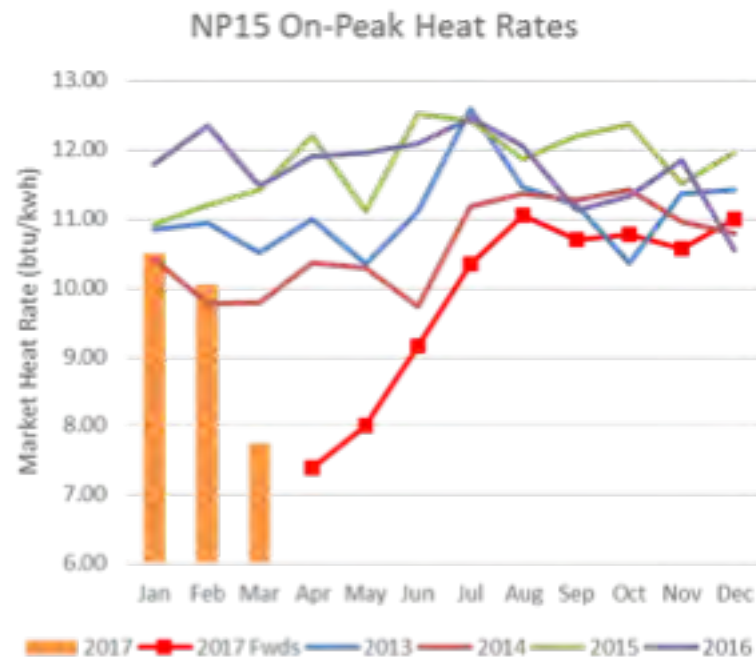
Forward Off-Peak Power



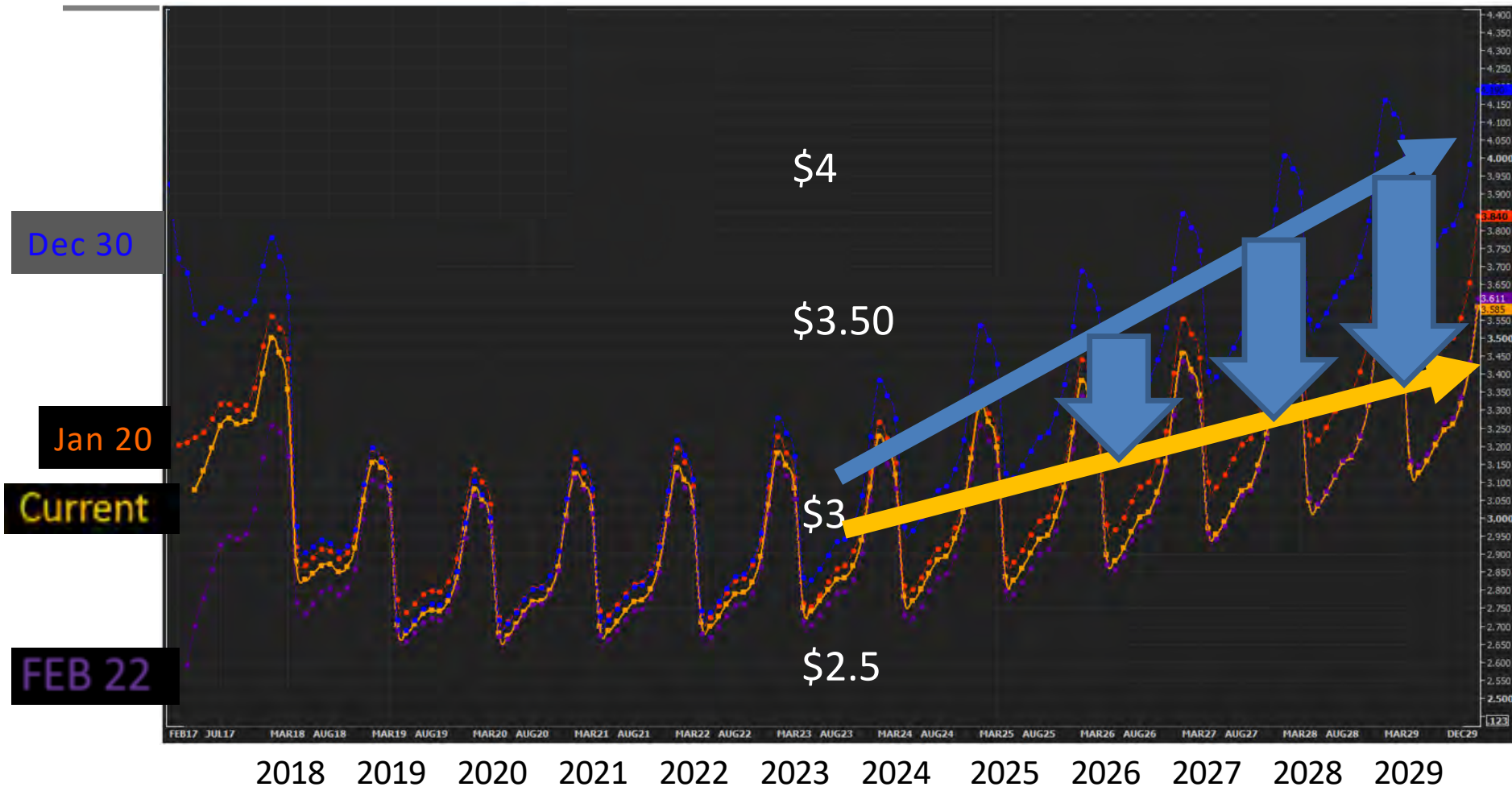
Forward Heat Rates



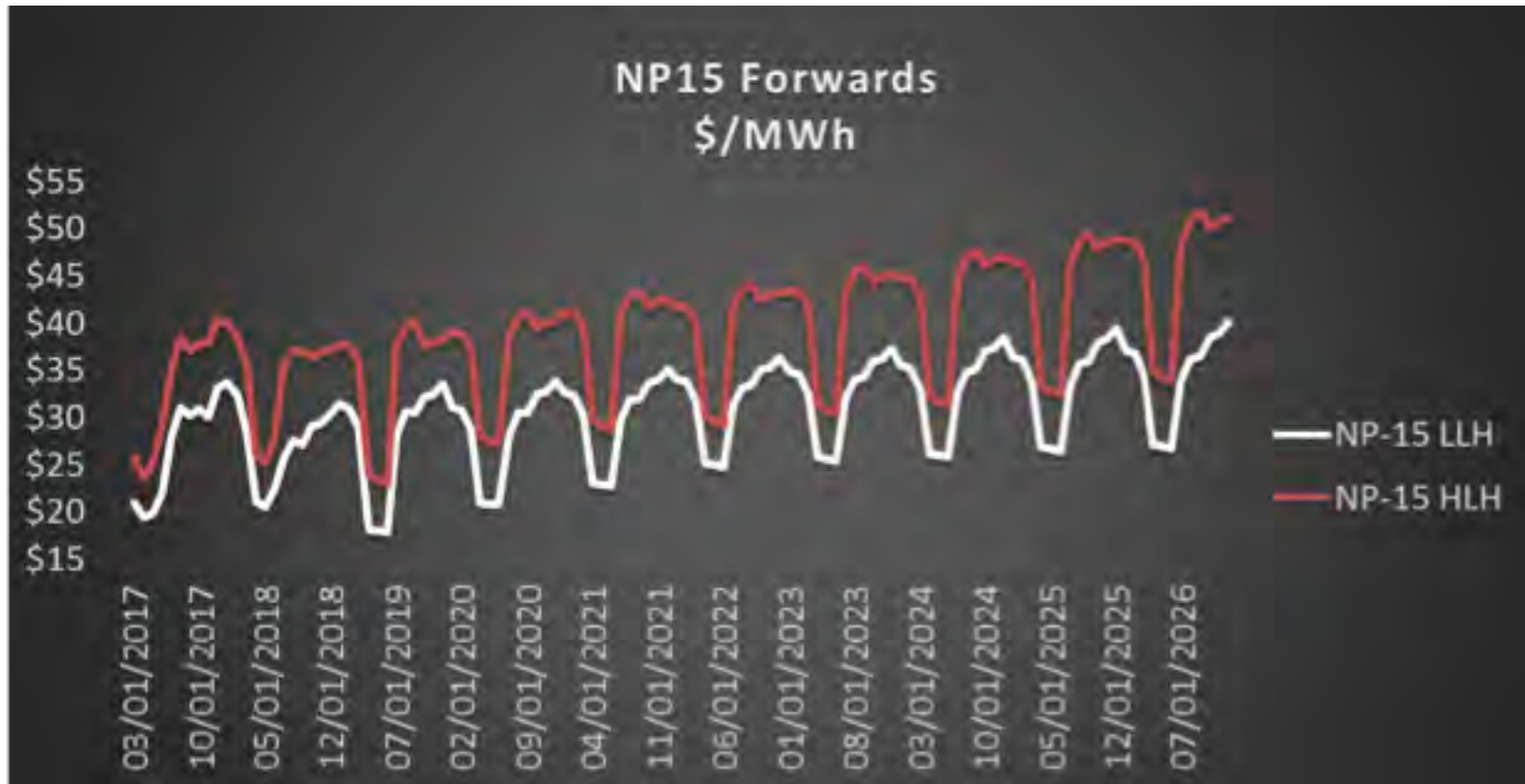
Forward Heat Rates vs. History



Long Dated Nymex Forward Curves



Long Dated Forward Power



Possible Future Market Related Topics

CAISO Hourly
Pricing

Regional Price
Spreads in WECC

Future Capacity
Changes
(adds/retirements)

California: Closer
look at North vs.
South

Natural Gas
Infrastructure and
Basis

Etc.

2017 Financial Outlook

2017 Headroom After Procurement

2017 Headroom

	\$/MWh	\$mm
PG&E Gen	\$ 96.82	\$ 40.00
RCEA Cost*		
Supply	\$ 45.98	\$ 18.99
O/H	\$ 8.20	\$ 3.39
PCIA+FF	\$ 25.82	\$ 10.67
10% Opt-Out	\$ -	\$ -
Headroom	\$ 16.83	\$ 6.95
\$4mm Reserves	\$ 9.68	\$ 4.00
Net of Reserves	\$ 7.15	\$ 2.95

January 2017 Board Meeting:

- \$16.07/MWh
- \$6.77 mm

January 2017 Board Meeting:

- \$6.57/MWh
- \$2.77 mm

*Inclusive of 5MW biomass, 65% GHG free generation (includes biomass), 38% renewables, 2.7% rate discount vs. PG&E

2017 Headroom Allocation

Potential Expenditures	\$/MWh	\$mm
2.7% Gen Rate Reduction	\$ 2.61	\$ 1.08
5 MW Biomass [@\$83]	1.99	0.82
PG&E GHG - 5%	1.13	0.47
Effect of 1 in 4 Price Increase	1.14	0.47
Subtotal	6.87	2.84
Net of Current Program Commitments	\$ 0.28	\$ 0.11

January 2017 Board Meeting:

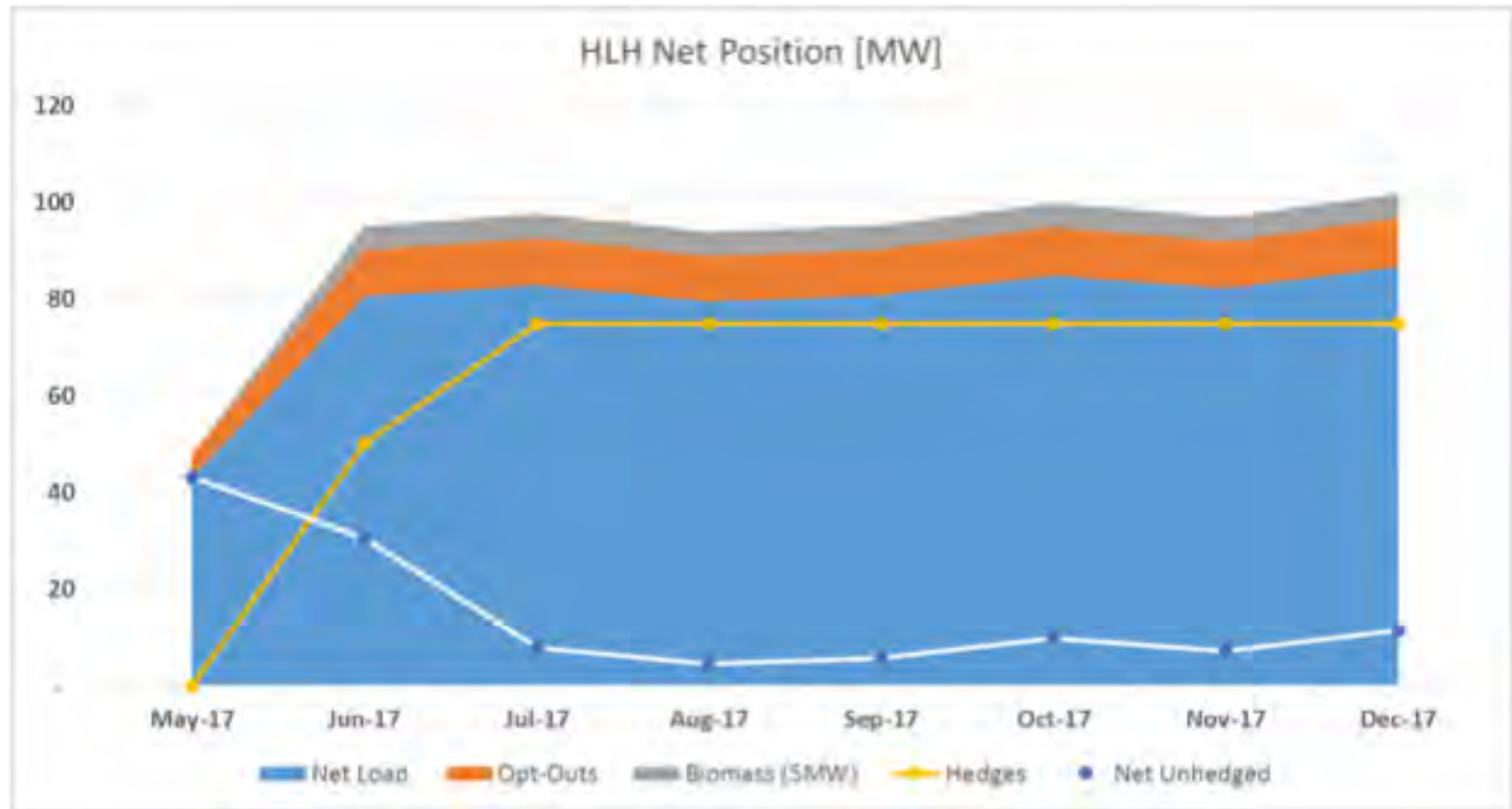
- (\$0.11)/MWh
- (\$0.04) mm

Procurement Status & Next Steps

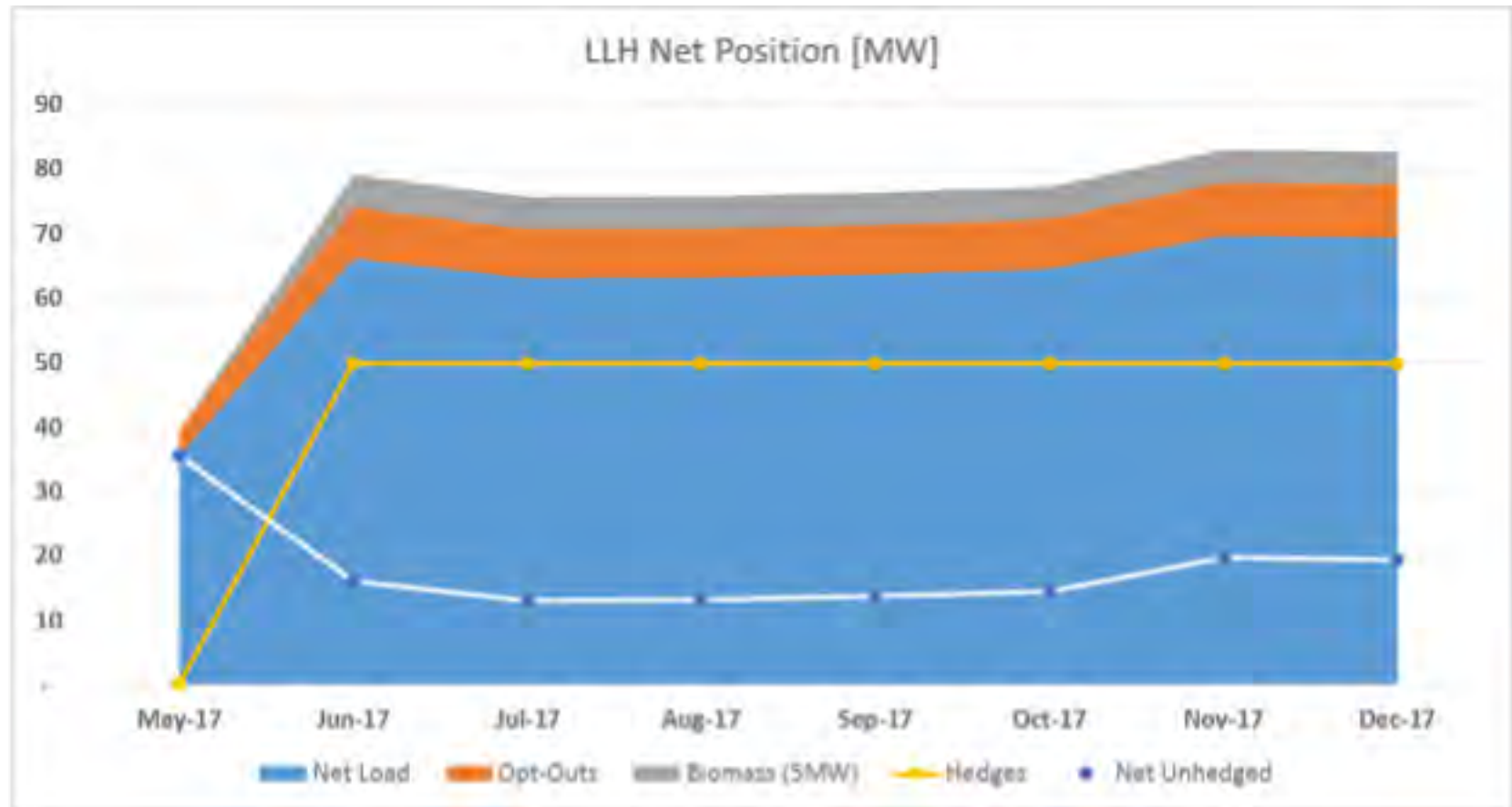
2017 Procurement & CRR Activities

Item	Schedule / Notes
1. Energy	<ul style="list-style-type: none"> Initial market procurement complete Assess residual requirements in June/July <ul style="list-style-type: none"> Currently anticipate short-term hedges in response to market fundamentals
2. Renewable Energy Credits ("RECs")	<ul style="list-style-type: none"> Initial market procurement complete HRC expected to provide ~50k Bucket 1 RECs <ul style="list-style-type: none"> Currently planning for DG Fairhaven to provide other 20k May require incremental market purchase in 2H17
3. GHG Free Supply	<ul style="list-style-type: none"> Anticipate procurement in April/May <ul style="list-style-type: none"> Discuss procurement quantity today
4. Resource Adequacy ("RA")	<ul style="list-style-type: none"> May procurement complete Finalize June procurement after determining when HRC in portfolio Jul-Dec procurement after learning Local and Flex requirements in April
5. Congestion Revenue Rights ("CRRs")	<ul style="list-style-type: none"> Load migration CRRs in late-May for June First monthly process will be June for July

Peak Hour (HLH) Net Position w/ 5 MW Biomass, 10% Opt-Outs & Proposed Hedges



Off-Peak Hour (LLH) Net Position w/ 5 MW Biomass, 10% Opt-Outs & Proposed Hedges



RCEA Renewable & GHG Free Supply

- PG&E 2016 actuals:
 - Renewable: **32.8%**
 - GHG free: **69.3%**
- Current RCEA renewable and GHG targets
 - Renewable: **38% (ok)**
 - GHG free supply: **65% (9-10% short of “5% > PG&E target”)**
 - *Estimated cost to procure 10% more GHG-free supply is \$105k*

2018 Procurement & CRR Activities

Item	Schedule / Notes
1. Energy	<ul style="list-style-type: none"> 13.25 aMW from HRC equivalent to ~15% of energy <ul style="list-style-type: none"> <i>Board direction to allocate headroom for second biomass could result in ~20% of requirements supplied from local biomass</i> 60% of energy requirements in October to align with setting of PCIA charge <ul style="list-style-type: none"> Currently anticipate balance of energy requirements procured short-term
2. Renewable Energy Credits ("RECs")	<ul style="list-style-type: none"> RPS and GHG free supply procurement in late-17 or early-18 <ul style="list-style-type: none"> Discuss longer-term "Bucket 2" and GHG purchase at upcoming risk meeting
3. GHG Free Supply	<ul style="list-style-type: none"> RPS and GHG free supply procurement in late-17 or early-18 <ul style="list-style-type: none"> Discuss longer-term "Bucket 2" and GHG purchase at upcoming risk meeting
4. Resource Adequacy ("RA")	<ul style="list-style-type: none"> Learn requirements in late-Q3 and procure late-Q3 and/or early-Q4
5. Congestion Revenue Rights ("CRRs")	<ul style="list-style-type: none"> Annual Auction process runs August through November <ul style="list-style-type: none"> Historical load submittal in August Path nominations in September Results posted in November

Upcoming “Deep Dives” - Tentative

Item	Date
1. TEA Risk & IOU Rate Models	April 2017
2. Congestion Revenue Rights Part 1 (Overview and Monthly Auctions)	May 2017
3. Congestion Revenue Rights Part 2 (Annual auction)	June 2017
4. PG&E Generation Rate and PCIA Charge Outlook	July 2017
5. Market outlook for Bucket 2 and GHG Free Supply	August 2017
6. Other possible topics: <ul style="list-style-type: none"> • Importing at renewable energy and/or GHG free supply at COB • Settlements 	



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East Bay Community Energy ERMP





Energy Risk Management Policy

Version 1.0

Approved
DATE

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1. Philosophy, Objectives and Scope

This Energy Risk Management Policy (ERMP) outlines the philosophies and objectives of East Bay Community Energy (EBCE) Board of Directors (Board). The Energy Risk Management Regulations (ERMR) also adopted by EBCE expand on the roles, strategies, controls and authorities authorized in this policy to form a comprehensive energy risk management program. The ERMR shall be read in conjunction with this ERMP.

1.1. Risk Philosophy

The overall goal of this ERMP is to:

- Serve the participating jurisdictions' needs subject to Board approved risk tolerance limits;
- Provide as much energy supply (generation and capacity) cost certainty for EBCE's customers as possible while maintaining a least cost supply portfolio; and
- Enhance the value of EBCE's assets to meet the financial goals and requirements of the participating jurisdictions.

As a joint powers authority, EBCE is in the business of generation, transmission and procurement of energy for the benefit of its participating jurisdictions. EBCE's objective is to develop the least cost supply portfolio to meet load requirements of its customers, while maximizing revenues from sales of surplus energy, capacity and other wholesale energy and transmission services (e.g. resource optimization). However, unlike a private-sector entity, EBCE's primary purpose in the power supply business is to serve its customers. EBCE's goal is to be a cost hedger for its participating jurisdictions' load and, is therefore, precluded by this policy from engaging in speculative activities typical to many organizations orientated toward profit maximization.

EBCE management recognizes that certain risks are incidental to normal power supply operations and hedging activities. EBCE's goal is to avoid unnecessary risk and to limit, to the extent practicable, any risks associated with normal cost-hedging activities. This document serves as a vehicle to describe and define the limits for activities considered as appropriate for EBCE in a normal course of business.

1.2. Business Activities

A primary part of EBCE's main business is to procure or produce power supplies, capacity, and reserves to meet its customer load requirements. The resource (capacity/energy) supply portfolio may consist of physical assets, such as power plants and distributed energy resources, fixed and variable priced supply contracts of varying lengths, and agreements for other related supplies and services needed to ensure reliable delivery of electricity to EBCE's customers.

1.3. Transacting Objectives

EBCE's overall transacting objective is to meet the load requirements of its customers with an

optimized resource supply portfolio. EBCE's objectives when transacting on behalf of its customers for the procurement of energy and energy related supplies and services are as follows:

- Meet customer load requirements including energy, capacity and reserves;
- Provide stable rates for the participating jurisdictions;
- Obtain the best available price for power supply while complying with the requirements of this policy and other objectives established by the Board (e.g. renewable energy policy goals);
- Manage EBCE's assets to optimize value;
- Act to limit exposure to extreme market system changes;
- Follow effective wholesale counterparty credit management procedures; and
- Develop and maintain EBCE's investment grade credit rating.

1.4. Scope of Policy

This ERMP addresses risks arising from EBCE's participation in the wholesale energy markets, and applies to all energy and energy related transactions made by EBCE. This ERMP does not address the following types of general property and casualty business risk: fire, accident and casualty; health, safety, and workers' compensation; general liability; and other such typically insurable perils. The term "risk management," as used herein, is therefore understood to refer solely to risks related to participation in wholesale energy markets as herein defined.

EBCE is exposed to three quantifiable risks: load and resource variability (volumetric), cost variability (price), and counterparty credit risk. From the perspective of risk mitigation, EBCE's primary objective is to cover load and optimize the value of assets. Taking risks in order to arbitrage market opportunities, or risks unrelated to EBCE's normal power supply business activities, is not permitted.

EBCE is also exposed to regulatory and operational risks. However, these exposures are not quantifiable as they affect structural change. As a result, these risk categories are managed as separate enterprise risk exposures and are not directly governed by this ERMP.

This ERMP prescribes the management organization, authority and processes to monitor, measure and control the risks to which EBCE is exposed in the normal course of business. Specific methodologies used to measure, monitor and control these risks shall be established by the Executive Director's Risk Oversight Committee (ROC), in accordance with sound utility practices and included in the ERMR.

1.5. Applicability

This ERMP is effective immediately upon its adoption by the Board. It applies to EBCE's wholesale supply operations, long-term contracting for energy/capacity and services, acquisition of generation resources, credit risk management and other related ancillary activities undertaken by EBCE.

1.6. Policy Review and Amendments

Prudence is required in implementing any and all policies and procedures. Market and industry norms, technology and risk tolerances tend to change over time. Therefore, this policy should be reviewed as needed, in order to make adjustments in response to changes in business objectives and/or industry norms. Amendments to this ERMP shall be done only by approved Resolution of the Board.

2. Risk Strategy & Parameters

An important aspect of implementing an overall energy risk management policy is the development of related strategies to mitigate all of the related risks associated with energy transacting activities. The key strategies of EBCE are outlined below.

2.1. Counterparty Risk Management

Counterparty risk is defined as the exposure to economic loss resulting from default by a party to a contract (e.g., a *counterparty*). Counterparty risk affects both contracts requiring physical settlement and those specifying monetary settlement. For all fixed price energy transactions, the counterparty must possess at least a BBB- (or equivalent investment grade rating) by a nationally recognized statistical rating organization (NRSRO). EBCE staff may consider counterparties with a rating below investment grade, or a counterparty without a NRSRO rating on a case-by-case basis, with the approval of the ROC.

Effective wholesale counterparty management and credit analysis is essential to mitigate the counterparty risks associated with commodity transactions in the energy markets. The objective is to preserve EBCE's capital, liquidity, and supply reliability by limiting counterparty credit risk and supplier concentration to acceptable levels. Methodologies to achieve this objective are set forth in the ERM.

2.2. Balanced Load

EBCE shall maintain an integrated and balanced portfolio of resources to cover its customer load within a dual volume and cost-at-risk framework.

2.3. Minimum Coverage Requirements

EBCE shall establish minimum coverage requirements, combined with defined cost-at-risk metrics, for capacity and energy as determined by the ROC and outlined in the ERM.

2.4. Diversification of Portfolio

EBCE shall strive to develop a resource portfolio that includes diversification in fuel type, contract duration, geographic location, counterparty, pricing terms, cash reserves and types of products.

2.5. Purchase to Cover Load Serving Obligations - No Speculation

As discussed in Section 1.3, EBCE's overall objective for energy procurement activities is to cover the load serving obligations of its customers. In the course of performing these activities, EBCE shall not engage in activities that expose its participating jurisdictions to speculative transactional risks, and shall only utilize approved transaction parameters as determined by the ROC and outlined in the ERM.

2.6. Use of Derivatives and Financial Transactions

Use of financial derivatives or transactions (as opposed to physical or "embedded" options) is allowed in limited circumstances by EBCE. These include transactions used to set price caps and floors, or hedge against load/price volatility. Examples include:

- Exchange traded Puts and Calls;
- Electric Futures;
- Electric Options; and
- Weather Derivatives.

Use of certain types of financial derivatives is necessary in order to mitigate various risks outlined in this policy while optimizing the resource portfolio. Such types of allowable financial derivatives or transactions (but not individual transactions) must be approved by the ROC as outlined in the ERM as developed by the ROC in accordance with this policy.

3. Risk Controls

3.1. Control Principles

EBCE will strive to conduct its energy risk management activities in accordance with best practices of the energy industry, but implementing such practices must be cost justified and balanced between costs and benefits. Processes and control systems must be in place that allow EBCE to identify, measure, monitor, control and track its risk exposures. These processes and control systems shall include the following risk management control principles:

- Appropriate segregation of duties and internal controls will be used;
- Appropriate systems to ensure accurate and effective management reporting;
- Necessary resources in place to achieve management objectives;
- Attract and retain skilled and trained personnel;
- Cross-train and provide cross coverage;
- Employees conducting energy transactions are free of conflicts of interest;
- Authority and approval delegation is commensurate with accountability and capability;
- Performance measurement and reporting incorporate risk and return measures; and
- Ongoing monitoring of control effectiveness.

3.2. Internal Controls

Internal controls shall be based on proven principles that meet the stringent requirements of generally accepted auditing standards (GAAS), financial institutions and credit rating agencies. The required controls shall include all customary and usual business practices designed to 1) prevent errors and improprieties, 2) ensure accurate and timely reporting of results of operations and other information pertinent to management, and 3) facilitate attainment of business objectives.

3.3. Segregation of Duties

Responsibilities related to energy transacting shall be segregated in a manner consistent with the control principles listed above by means of clearly defined roles and responsibilities for the Front Office, Middle Office and Back Office operations. Such roles and responsibilities can also be provided by a qualified third party services provider. Specific roles, responsibilities and organizational structure of these functions are outlined in Section 4 of the ERMP.

These controls shall be fully integrated into all business activities of EBCE, and there shall be active participation by senior management in risk management processes.

3.4. Conflicts of Interest

All EBCE employees who are engaged in energy supply resource transactions, counterparty credit evaluation, or oversight of the foregoing and are employed in any job classification listed in the EBCE Conflict of Interest Code are required to complete annual conflict of interest filings on FPPC Form 700 and disclose investments as required by that code.

In addition to the foregoing disclosure requirement, EBCE employees engaged in energy supply resource transactions, counterparty credit evaluation or oversight of the foregoing, are barred from investing in any company with whom EBCE has consummated energy or related purchases or sales within the last two years.

Such employees must divest existing direct holdings in energy counterparties prior to engaging in any negotiating, evaluating, transacting or oversight functions. The ban on investment and requirement for divestment applies regardless of whether or not the investment would be of sufficient size (\$2,000) to require disclosure on FPPC Form 700.

EBCE employees supervising staff who are subject to this policy are responsible for routinely reviewing Form 700 of each such staff member for the purpose of identifying potential financial conflicts of interest. General Counsel will assist in reviewing these forms and providing legal advice in connection with such reviews upon request.

4. Roles, Responsibilities, & Organization

This section of the ERMP defines the overall roles and responsibilities for implementation of this ERMP. The coordinated efforts of personnel across several divisions are required to successfully

implement EBCE's risk management program. Section 4 of the ERMP outlines the basic roles and responsibilities of each organizational function. Specific details and the specific roles and responsibilities of the oversight and operational divisions within the energy risk management program structure at EBCE are outlined in the ERMR, as developed by the ROC and revised from time to time.

4.1. EBCE Board of Directors

The Board has the ultimate oversight over EBCE operations and is responsible for establishing an organizational-wide framework for risk management and ensuring that risk management results are achieved as planned. The Board shall approve and establish organizational policies for risk management and delegate to the Executive Director the responsibility for implementing the ERMP. With responsibility for the ultimate oversight over EBCE operations, the Board shall be responsible to insure the risk management results are achieved in accordance with the ERMP.

4.2. Executive Director

The Executive Director has overall responsibility for implementing the ERMP and for communicating risk management issues to the Board. The Executive Director shall be responsible for delegating specific duties for carrying out the policy and insuring compliance with it by all affected EBCE employees or contractors. The Board acknowledges that the Executive Director shall established the ROC as a member/staff function and may delegated certain functions to the ROC, which delegation is ratified by this ERMP.

4.3. Risk Oversight Committee

The Risk Oversight Committee (ROC) is responsible for overseeing compliance with risk management policies within EBCE. The ROC serves as the highest level of organizational risk management reporting to the Executive Director. The ROC shall consist of EBCE Management, participating jurisdictional representatives and EBCE's legal counsel, as designated by the Executive Director from time to time. A quorum for the ROC to do business shall be not less than three Committee members (including not less than one participating jurisdictional representative) or their designees.

The two participating jurisdictional representatives shall be appointed to the ROC by the Executive Director. These participating jurisdictional representatives shall reflect the diversity of EBCE's customers (including larger and smaller jurisdictions). The participating jurisdictions may nominate potential ROC members. The Executive Director shall select ROC representatives based on those recommendations.

Each ROC member shall have one vote, and may appoint a voting alternate with the approval of the Executive Director. Participating jurisdictions not represented on the ROC may send representatives to attend ROC meetings and participate in ROC discussions; however, these non-ROC participants will have no voting rights.

The ROC will meet at least quarterly, to act on the responsibilities mentioned above.
Individual

participating jurisdictions may request the ROC to convene in a timely fashion if ROC approval is required for any transaction affecting EBCE. Minutes to each meeting will be maintained according to EBCE policy.

The ROC shall make regular reports to the Board regarding business transacted by the ROC at such intervals as the Board shall direct.

The ROC shall have the responsibility for ensuring that business is conducted in accordance with the ERMP. The ROC shall adopt and keep current “Energy Risk Management Regulations,” which shall define in detail the internal controls, strategies and processes for managing risks covered under the ERMP. Specific ROC responsibilities are outlined in detail in the ERMR.

4.4. Front Office (Planning and Procurement)

The Front Office is responsible for resource planning and procuring resources to meet the physical, financial and contractual requirements of EBCE, with load/resource balancing provisions and such other arrangements as may be approved by the Board in the future. The function includes contract administration, managing the risk assumptions for electricity transactions, including physical and financial needs analyses, energy purchases and sales, procurements of capacity, ancillary services and coordinating energy delivery scheduling. The Front Office is responsible to ensure that the procedures and processes needed to transact business within the ERMP are in place and they perform all duties related to actual transacting in the wholesale energy markets. The Front Office is the primary interface with potential wholesale transacting counterparties. The Executive Director and Director of Power Resources are responsible for managing the Front Office, and can be supported by qualified third party suppliers. Front Office activities and detailed responsibilities are outlined in the ERMR.

4.5. Middle Office Controls and Reporting

The duties of the Middle Office will be conducted by the Finance and Administrative Services Department, and/or are supported by a qualified third party supplier. Its primary purpose is to manage risk oversight and controls. The Middle Office provides independent oversight of the risks assumed by the Front Office in the course of transacting energy products and services. The Middle Office must be independent from the Front Office functions. The Director of Finance and Administrative Services is responsible for managing the Middle Office. Detailed responsibilities of the Middle Office are described in the ERMR.

4.6. Back Office (Settlements and Recording)

The Back Office is primarily responsible for settlement of bills, recording transactions, bookkeeping and accounting, and contract compliance. It is responsible for providing assurance of accurate transaction records and settlements. Back Office functions are conducted by personnel in the Finance and Administrative Services Department, and/or are supported by a qualified third party supplier. Detailed responsibilities of the Back Office are described in the ERMR.

4.7. Auxiliary Functions

Additional issues impacting the overall power supply and risk management program include establishment of financial reserve requirements, which are generated by auxiliary support functions in the Finance and Administrative Services Department.

The Finance and Administrative Services Department is responsible for preparation of the budget and the calculation of rates used to bill customers for their related power supply usage. In addition, the Finance and Administrative Department is responsible for establishment of necessary reserve levels for the various projects owned by EBCE, if any, and for the EBCE in general. The Finance and Administrative Services Department is also responsible for establishment of reserves necessary for credit risks related to counterparty credit as mentioned in the ERMP, but as more clearly defined in the ERMR.

4.8. Authorities, Delegations, Limits and Prohibitions

All executed transactions shall conform to the policies set forth herein. It shall be the responsibility of the ROC, with approval of the Executive Director, to establish appropriate individual transacting authority limits for the various personnel involved in the Front Office function. All staff with designated responsibility for Middle Office or Back Office functions are strictly prohibited from executing any wholesale transactions. The Middle Office shall be responsible for informing counterparties of such approved authorizations, including transacting authority and restrictions, along with product types and/or term and dollar limits.

5. Policy Compliance

5.1. Compliance Exceptions

Compliance exceptions are actions which violate the authority limits or directives set forth herein or in the ERMR as developed and adopted pursuant hereto by the ROC.

5.2. Reporting of Exceptions

The Executive Director shall notify the ROC of exceptions to mandated policies, procedures and regulations within 48 hours after they are identified, and ensure Front Office prepare a full report for review and discussion at the next ROC meeting.

5.3. Audit

Compliance with this ERMP and with the specific ERMR requirements instituted pursuant to this ERMP, shall be subject to examination by EBCE's independent auditors or by such other reviewers that EBCE or ROC may appoint to evaluate the effectiveness of mandated controls.

5.4. Reserves

The ROC and the Executive Director, or his/her designee, are responsible for ensuring adequate

reserves for energy price exposure and credit losses are maintained by EBCE. The reserve estimate methodology, as established by the Finance and Administrative Services Department, shall be reviewed and approved as needed to ensure appropriate reserve levels are maintained and funded.

5.5. Systems, Tools and Training

EBCE employees who are authorized to perform energy risk management functions on behalf of EBCE shall be provided with the necessary systems and tools to support all risk management processes.

Provision shall be made in the budgets submitted for each division which performs market risk management functions on behalf of EBCE for the acquisition and maintenance of computer systems, software, communications equipment, data services and other analytical, measurement and reporting tools.

Provision shall also be made in the budgets submitted for each EBCE division/department which performs market risk management functions on behalf of EBCE for managers and staff to attend seminars and courses in risk management on a regular basis.



ENERGY RISK MANAGEMENT REGULATIONS

Version 1.0

Effective:
DATE

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Objective of the Energy Risk Management Regulations

East Bay Community Energy (EBCE) provides a variety of wholesale and retail energy services to customers within the service areas of its participating jurisdictions (Participating Members). EBCE's goals regarding the provision of such services include, but are not limited to: (i) optimizing the value of EBCE's generation assets, (ii) providing its Participating Members with the lowest cost supply portfolio based on certain policies that may be adopted by the Board from time to time (e.g., renewable energy policy goals), and (iii) maintaining reliable electric service to its Participating Members' customers. Inherent in these goals is the need to manage risks related to transacting in various Energy markets, and providing other wholesale Energy and transmission services on behalf of the Participating Members (e.g., resource optimization).

The purpose of these Energy Risk Management Regulations (Regulations) is to utilize the philosophies and objectives specified in the Energy Risk Management Policy, and document and describe the roles, strategies, controls and authorities that will govern EBCE's comprehensive energy risk management program.

Part I: Energy Risk Management

1. Scope of Regulations and Procedures

1.1. Overview

The EBCE Board will adopt an Energy Risk Management Policy (ERMP) which addresses risks faced by EBCE arising from EBCE's procurement activities on behalf of Participating Members in Energy and related markets. EBCE will develop two-pronged set of metrics that guide procurement decisions that include a rigorous analysis of net open position limits by month (discussed further in Appendix 9) and a cost-at-risk which may include but not limited to total portfolio cost at risk, rate at risk, and cost per wholesale MWh at risk. The ERMP provides for oversight by the Risk Oversight Committee (ROC) and mandates adoption of these Regulations by the ROC to address specific risk management issues. Controls, strategies and processes for managing risks outlined in the ERMP are documented in these Regulations.

1.2. Applicability, Amendments and Updates

These Regulations are initially made effective upon the Board's adoption of the ERMP, and shall subsequently be amended and/or restated from time to time by action of the ROC, when deemed necessary, by the ROC.

2. Definitions of Risk

The term "risks," as used herein, refers specifically to those categories of risk which relate to EBCE's participation in wholesale Energy markets for the purchase and sale of Approved Products, as further described in these Regulations. These risks include, but are not limited to, volumetric, price, counterparty, regulatory and political, and operational risks.

2.1. Volumetric Risk

Volumetric risk is the risk that fluctuations in supply or demand will adversely affect net revenues. Thus, if actual load demands are higher than anticipated, and market prices have increased beyond expectations, the costs to serve such load will be greater than expected. Alternately, if load demands are less than expected, then surplus supply may be sold back into the market. If market prices have declined since the Energy was originally purchased, the ability to serve load at least cost may be impacted. For ECBE, demand variability is largely attributable to three factors: (1) changes in demand related to the weather, (2) changes in demand related to economic activity, and (3) changes in demand related to customers joining and exiting ECBE service. This third portion of demand uncertainty is unique to CCA's and the risks associated with it need to be carefully considered. If supply availability is uncertain, such as when hydroelectric generation capacity is impacted by uncertain rainfall patterns, a resulting shortfall in generation may necessitate the purchase of alternative supply through the wholesale market when prices may be rising, which may also result in increased costs. Volumetric risk also covers the possibility of the unplanned loss of generation resources, transmission curtailments, and extreme weather events that can result in insufficient resources to meet load demands.

Volumetric risk is managed by maintaining financial reserves, diversifying the resource portfolio and developing a regular update of load and resource forecasts.

2.2. Price Risk

Price risk is the risk associated with changes in the market prices of Energy and Energy related products. Price risk is the possibility that the absolute price of a given Energy related product will fluctuate in an unfavorable manner, thereby exposing EBCE to potential cost increases or loss in value to its Participating Members. ECBE will be exposed to price risk any time its fixed-price supply does not perfectly match demand. There are a number of ways that supply and demand may be mismatched. In its simplest form, demand may exceed supply, and any unhedged demand is exposed to changes in prices. With renewable supply, it is common that the production profile of the supply resource does not match the consumption profile of customers. Since hourly prices for electricity vary greatly within the day, this creates risk. This is referred to as “shape” risk. Another mismatch results from locational differences – an entity with generation in one region serving load in another region is exposed to price differences between the two regions. This is referred to as “basis” risk. These risks can manifest themselves over different time periods ranging from sub-hourly mismatches to long term mismatches.

Price risk is managed by closely monitoring and measuring the supply portfolio against estimated demand. The supply portfolio should be constructed to match resources against load obligations taking into account the various risks. Supply portfolios can benefit from resource and fuel source diversification, start dates, duration, pricing terms, types of products, geographic location, and by actively managing portfolios and assets.

Example of Price Risk

ECBE will focus on the price risk of its entire portfolio which is comprised of many individual transactions. When managing risk, ECBE will care about the impact of all of the transactions in the portfolio rather than a single transaction. That said, the portfolio is comprised of a series of individual transactions, and the examples below illustrate how the value of an individual transaction can be impacted by changes in prices.

For example, assume EBCE needs to buy 10,000 MWh of electric power for the last quarter of the coming year (October through December). On January 15th, the market price for that power was \$28.90/MWh, for a total cost of \$289,000. On March 15th, the market value was \$39.00/MWh, or \$390,000. If the budget was set as of the January 15th market price, but the product was not purchased until March 15th, then the cost would be \$101,000 more than budgeted.

Price risk can be viewed as the possibility of a change in the MTM value of a transaction. To illustrate this definition, assume as above that the 10,000 MWh for October – December was purchased on March 15 for \$390,000. If the price for that product drops to \$25/MWh or \$250,000 on September 15th, the MTM of the transaction is negative \$140,000 as of September 15th.

2.3. Counterparty Credit Risk

Counterparty credit risk means risks which EBCE incurs as the result of transacting Approved Products with other entities. It must be understood that in the context of wholesale electric utility operations, both buyers and sellers may be exposed to counterparty credit risks. These risks are of five general types:

- Transacting counterparties may fail to render payment for Energy related products delivered, or otherwise default under the terms of the transaction;
- Transacting counterparties may fail to deliver Energy related products;
- Transacting counterparties may fail to take delivery of Energy related products sold to them, necessitating a resale elsewhere (potentially at a loss) of the Energy related products;
- Counterparties may refuse to extend credit to EBCE; and
- A counterparty or its guarantor may seek bankruptcy protection.

Counterparty credit risk can be mitigated through counterparty diversification, credit risk premium, covenants, credit derivatives (credit default swaps) and insurance.

2.4. Regulatory and Political Risk

Regulatory and political risks are the risks that regulatory agencies, courts and legislatures may take actions or adopt measures which:

- Result in fines, assessments or other unrecoverable costs;
- Make a transaction unlawful or adversely change its economic benefit;
- Adversely affect market prices or liquidity, leading to trading losses and stranded asset costs;
- Impair the capability or willingness of EBCE's trading counterparties and wholesale suppliers to perform;
- Prevent EBCE from performing to its own contractual obligations;
- Interfere with operation of EBCE's generation or related assets; or
- Negatively impact EBCE's ability to finance capital projects.

Regulatory and political risks are difficult to measure and manage. EBCE has an active legislative and regulatory strategy which monitors and influences the outcome of legislative and regulatory actions for the benefit of EBCE and its Participating Members.

2.5. Operational Risk

Operational risk consists of the potential failure to act effectively to plan, execute and control business activities. Operational risk includes the potential for:

- An organizational structure that is ineffective in addressing risk (i.e., the lack of sufficient authority to make and execute decisions, inadequate supervision, no internal controls, incomplete and untimely reporting, failure to separate incompatible functions, etc.);
- Absence, shortage or loss of key personnel;
- Lack or failure of facilities, equipment, systems and tools such as computers, software, communications links and data services;

- Inability to finance capital projects or meet financial obligations incurred in the course of wholesale operations;
- Exposure to litigation or sanctions as a result of violating laws and regulations, not meeting contractual obligations, failure to address legal issues and/or receive competent legal advice, not drafting and analyzing contracts effectively, etc.; and
- Errors or omissions in the conduct of business, including failure to execute transactions, violation of guidelines and directives, etc.

Operational risk can be managed by adequate oversight and the existence of and adherence to contracts, policies, regulations, and procedures. Operational risk is reduced by streamlined and well defined simple processes managed by skilled and competent staff with appropriate supporting physical and technological resources and appropriate oversight.

2.6. Market Risk

Market risk is manifested by the interdependencies of a market where the failure of a single entity or cluster of entities that may or may not be counterparties can cause a cascading failure which could affect an entire market.

2.7. Legal Risk

Legal risk arises when a counterparty or a Participating Member is not capable of entering into, or has procedurally failed to obtain appropriate approvals to enter into, a contract. Legal risk is managed externally by ensuring counterparty representatives are authorized by the counterparty. Regarding long-term contracts, EBCE will manage legal risk by rigorously vetting and reviewing wholesale electricity contracts with appropriate legal and market experts.

2.8. Concentration Risk

Concentration risk denotes the overall spread of exposures over the number or variety of counterparties. Concentration risk is calculated using the percentage of outstanding exposures each counterparty represents. Concentration risks may result from an uneven distribution of exposures to an individual counterparty, or an uneven distribution of exposures to particular sectors or regions.

Concentration Risk is managed pursuant to Section 18.3 of Part II of these Regulations which requires staff to document the business reasons for awarding Energy contracts to counterparties to whom EBCE has high concentrations of credit exposure.

2.9. Liquidity Risk

Liquidity risk is financial risk due to uncertain liquidity. Liquidity risk may include the risk of insufficient net cash flows on a short term basis, lack of access to credit facilities, the inability to liquidate an asset or position on short notice, and the risk of maintaining explicit liquidity reserves.

EBCE mitigates counterparty liquidity risk with regular, up-to-date credit evaluations; mitigates internal liquidity risks with adequate deposits from Participating Members (if required); and mitigates asset

liquidity risk by utilizing contractual instruments (e.g., approved enabling agreements).

2.10. Custodial Credit Risk

Custodial credit risk is the risk that, in the event of the failure of a custodial asset holder, an entity would not be able to recover the value of its deposits, investments or collateral securities that are in the possession of the custodian.

Custodial credit risk is mitigated by keeping deposits at FDIC insured institutions below insurance thresholds and actively monitoring the creditworthiness of the custodian.

2.11. Business Risk

Business risks are the risks inherent in EBCE's operations and environment that may impair its financial sustainability. These risks include the risks listed in this Section 2, in addition to the risks of creating and maintaining production and administrative facilities.

Business risks are mitigated by adequate planning and budgeting, training of staff and maintaining appropriate insurance coverage.

3. Risk Management Strategies

An important aspect of implementing an overall energy risk management program is the development of related strategies to mitigate all of the related risks associated with Energy product trading activities. The key strategies used by EBCE are outlined below.

3.1. Balanced Portfolio

EBCE shall strive to maintain an integrated and balanced portfolio of resources to cover its Participating Members' load serving obligations, and maintain the value of EBCE's assets, and manage resources within EBCE's financial requirements and within a dual volume and cost-at-risk framework, integral to EBCE's risk management strategy. The "cost at risk" will be designed to capture all of the volume mismatches, basis risk, shape risk, and other balancing risks associated with a given wholesale electricity contract.

3.2. Minimum Coverage Requirements

3.2.1. Minimum Coverage Requirements for Energy

EBCE shall strive to manage price and volatility risk by implementing a diversified procurement strategy that involves purchasing energy products to hedge costs for serving load. EBCE shall strive to purchase amounts of energy based on defined minimum coverage thresholds as set forth in the Time-Price Coverage Matrix combined with a cost-at-risk metric contained in Appendix 9 (Recommended Coverages) of these Regulations. The Time-Price Coverage Matrix, along with the cost-at-risk metric will be used as a guide for EBCE's short term and long-term procurement strategies. The objective of the dual framework is to develop a procurement strategy focused on hedging against the risk of open load positions, as measured over time, and to mitigate EBCE's exposure to market price volatility and

other pricing risk. The actual covered positions taken by EBCE, reflected as a percentage of forecasted load, may deviate from the recommended coverages contained in the dual framework based upon EBCE's staff evaluation of current market conditions and other applicable requirements (e.g., regulatory requirements).

3.2.2. Minimum Coverage Requirements for Capacity

EBCE is required to acquire certain types and amounts of Resource Adequacy capacity, as further set forth in applicable requirements. Such rules, including the CPUC Decisions, establish minimum Resource Adequacy requirements in accordance with policies adopted by EBCE's respective Local Regulatory Authority. Pioneer shall acquire the types and amounts of capacity required to comply with the Resource Adequacy requirements established by its respective Local Regulatory Authority.

3.3. Diversification of Portfolio

EBCE shall strive to develop an integrated resource portfolio that includes a minimum level of diversification in fuel type, contract duration, geographic location, counterparties, pricing terms, cash reserves and types of products.

3.4. Purchases to Cover Load Serving Obligations (No Speculation)

EBCE's primary objective for energy product procurement activities is to cover the load serving obligations of its Participating Members. In the course of performing these activities, EBCE shall not engage in activities that expose EBCE to speculative trading risks, and shall only utilize approved products and transaction parameters as approved by the ROC, and defined in these Regulations.

3.5. Authority to Transact Approved Products

The type of Energy related products EBCE may transact will have a direct impact on the amount of risk EBCE assumes as a result of such activities. The types of Energy related products that EBCE is authorized to transact (herein after referred to as "Approved Products") are specifically identified in Appendix 6 of these Regulations.

4. Roles and Responsibility for Energy Risk Management

4.1. Board of Directors

The Board has the ultimate responsibility for oversight of EBCE's operations, and is responsible for establishing an organizational framework for risk management and for ensuring that risk management results are achieved as planned. The Board has approved and established organizational policies for risk management, and has delegated to the Executive Director the responsibility for implementing the ERMP. The Board is responsible for ensuring appropriate results are achieved in accordance with the ERMP. The Board shall perform an annual review of the ERMP and modify the policies, as needed.

4.2. Executive Director

The Executive Director has day-to-day responsibility for executing and ensuring compliance with the ERMP, and for communicating risk management issues to the Board. The Executive Director shall ensure clear lines of authority and responsibility for assessing, measuring, and managing the risks of EBCE, and for monitoring the functionality of all components of the risk management system. The Executive Director may delegate specific duties for carrying out the policy and insuring compliance by all affected EBCE employees or contractors.

4.3. Risk Oversight Committee

The ROC is responsible for overseeing EBCE's compliance with the ERMP. The ROC serves as the highest level of organizational risk management reporting to the Executive Director. The members of the ROC consist of the Executive Director, Director of Finance and Administrative Services, Director of Power Resources, and two (2) Participating Member representatives. EBCE's legal counsel shall serve as legal advisor to the ROC. The ROC may seek the advice of other advisors at its discretion, including EBCE's Wholesale Energy Services Provider. A quorum of the ROC consists of not less than three ROC members, or their designees, including at least one Participating Member representative. A quorum of the ROC shall be required for the ROC to conduct business.

The two (2) Participating Member representatives shall be appointed to the ROC by the Executive Director. These Participating Member representatives shall reflect the diversity of EBCE's participating jurisdictions (e.g., both larger and smaller Participating Member representation). EBCE's Participating Members may also nominate potential ROC members. The Executive Director shall select Participating Member representatives based on these recommendations. Participating Member representatives shall be appointed for a term of two (2) years.

Each ROC member shall have the right to cast one (1) vote per issue, and may appoint a voting alternate with the approval of the Executive Director. Participating Members that are not represented on the ROC may attend ROC meetings and participate in ROC discussions; provided, however, non-ROC Participating Members will have no voting rights.

The ROC will meet at least quarterly, or as needed, to carry out the responsibilities described in these Regulations. Individual Participating Members may request the ROC to convene at any time, in a timely fashion. Minutes of each meeting will be maintained by EBCE staff.

The ROC shall provide a report to the Board at least annually, regarding the business activities of the ROC, or at such other interval as directed by the Board.

The ROC is responsible for ensuring that EBCE's risk management practices are conducted in accordance with the ERMP and these Regulations. The ROC shall adopt and keep current these Regulations, which shall define in detail the internal controls, strategies and processes for managing risks covered under the ERMP.

ROC responsibilities and delegated authorities are:

- Establishing overall risk tolerances related to Approved Product transactions and counterparty credit risk;

- Reviewing and approving Exception Reports to the ERMP and these Regulations;
- Setting, changing and approving the design of all internal control processes related to energy risk management and Approved Product transactions;
- Assessing the adequacy and functioning of the system of controls over volumetric, price and counterparty credit risks;
- Reviewing all statistical modeling parameters, risk tolerances, risk factors and/or risk weights associated with all Approved Product transaction strategies;
- Reviewing and recommending changes to ERMP policies, the types of Approved Product transactions and controls (e.g., limits, risk/performance methodology, etc.), including the addition of new products and instruments as described in these Regulations;
- Recommending appropriate cash reserve levels to support EBCE's Approved Product transaction activities;
- Reviewing the ERMP, and recommending any amendments to the Board;
- Reviewing and assessing the adequacy of the risk reports generated by the risk management function;
- Ensuring that the results of risk management activities are reported to the Board, and all risk management reports are provided to the Board in accordance with Appendix 7 of these Regulations, or as necessary;
- Reviewing and recommending appropriate transaction authority levels and delegation of authority to EBCE personnel, related to Approved Product transactions; and
- Reviewing, recommending and approving changes to these Regulations, as needed.

Specific responsibilities of the ROC members and advisors are described in Appendix 2 of these Regulations.

4.4. Front Office

The Front Office staff is responsible for the provision of wholesale energy services, which include, but are not limited to, planning and portfolio management, Approved Product transacting, contract origination, schedule coordination and real-time dispatch operations. The Front Office provides recommendations for load and resource balances, and portfolio optimization. These activities are conducted in order to meet the physical, financial and contractual requirements of EBCE. As part of these functions, the Front Office is responsible for transacting Approved Products on behalf of EBCE, in accordance with certain transactional limits, as further defined in these Regulations. All Approved Products that the Front Office is authorized to transact are identified in Appendix 6 of these Regulations. The Front Office is responsible for ensuring that the procedures and processes needed to transact business within the requirements and guidelines of the ERMP and these Regulations are fully implemented, and shall perform all duties related to actual transacting in the wholesale Energy markets. The Front Office is the primary interface with potential wholesale transacting counterparties. The Director of Power Resources is responsible for managing the Front Office. The Front Office may also utilize support from EBCE's Wholesale Energy Services Provider to carry out the duties described herein.

The Front Office is primarily responsible for:

- Day-to-day purchases and sales of Approved Products for EBCE;

- Developing transaction strategies that are consistent with EBCE's ERMP and established risk tolerances;
- Ensuring infrastructure (hardware/software) is in place to support accurate and timely measurement and reporting of risk;
- Ensuring that procedures and systems can effectively and efficiently support the Front Office activities;
- Ensuring training is completed by Front Office staff, as required by CAISO, to comply with minimum participation requirements for participation in CAISO markets;
- Conducting needs analysis for meeting load forecasts, optimizing the value of resources, and satisfying regulatory and/or compliance requirements;
- Recommending transactions for authorization and approval;
- Proposing modifications to commercial provisions of Board approved contracts to the Executive Director for consideration and approval;
- Purchasing and/or selling Approved Products and services based on meeting the load forecast, optimizing the value of EBCE assets, and satisfying regulatory and/or compliance requirements;
- Conducting sales transactions for surplus resources;
- Nominating and managing CRRs in the annual and monthly allocation processes;
- Preparing and submitting bids in the CRR annual and monthly auction processes;
- Transacting Approved Products to satisfy applicable regulatory and compliance requirements (e.g., renewable Energy requirements, emission compliance obligations, etc.);
- Development and maintenance of Renewable Energy Products tracking and allocation;
- Competitively shopping and negotiating transactions in accordance with the ERMP;
- Generating trade confirmations (as needed);
- Ensure transactions are recorded timely and accurately, and that valuation and risk measurement are performed according to approved methodologies;
- Working with the Middle Office to develop and implement risk measurement methodologies and quantitative applications, where appropriate;
- Identifying new products and markets that may add value to EBCE;
- Prepare reports as outlined in Appendix 7 of these Regulation;
- Initiate requests for new counterparty reviews; and
- Prepare and maintain written Front Office procedures.

4.5. Middle Office

The duties of the Middle Office staff are conducted by the Finance and Administrative Services Department. Its primary purpose is to manage risk oversight and controls. The Middle Office provides independent oversight of the risks assumed by the Front Office in the course of transacting Approved Products and services. The Middle Office must be independent from the Front Office functions. The Director of Finance and Administrative Services is responsible for managing the Middle Office. The Middle Office may also utilize support from EBCE's Wholesale Energy Services Provider to carry out the duties described herein.

The Middle Office is responsible for oversight, reporting and training; including:

- Managing and overseeing risk, including reviewing controls and reviewing valuation and risk management methodologies;
- Developing and implementing counterparty credit risk policies, procedures and limits as approved by the ROC;
- Reviewing and approving changes and provisions to enabling agreements (including all credit terms);
- Monitoring EBCE's current and potential risk exposures and ensuring compliance with the ERMP and these Regulations;
- Ensuring Middle Office training is completed;
- Verifying that Approved Product transactions are authorized and executed based on the requirements of the ERMP and these Regulations, and are properly recorded in the deal capture systems;
- Monitoring the effectiveness of the internal control structure, including the segregation of duties and independence of oversight;
- Maintaining a list of individuals who are authorized to approve and execute Approved Product transactions;
- Ensuring timely and accurate collection of market data for risk measurement and reporting;
- Conducting necessary stress test on portfolio exposure and CVaR models;
- Preparing, reviewing and distributing all risk management reports;
- Processing and verifying market data provided by the Front Office;
- Maintaining independent market forward price data;
- Evaluating performance of Approved Product procurement and hedging transactions relative to market indices and approved budget;
- Notifying the ROC of credit limit exceptions;
- Working with the Front Office to develop and implement risk measurement methodologies and quantitative applications;
- Serving as secretary of the ROC, developing ROC agendas, taking and compiling meeting minutes, and distributing meeting materials;
- Maintaining archives of risk management program documents;
- Monitoring and ensuring compliance with the Commercial Compliance Policy;
- Coordinating risk management education and training;
- Various credit management duties as outlined in these Regulations; and
- Prepare and maintain written Middle Office procedures.

4.6. Back Office

The Back Office staff is primarily responsible for settlement of invoices, verifying transactions, bookkeeping and accounting, and ensuring Approved Product transactional activities are consistent with contract authorities and requirements. The Back Office is responsible for providing assurance of accurate transaction records and settlements. The Director of Finance and Administrative Services is responsible for managing the Back Office. The Back Office may also utilize support from EBCE's Wholesale Energy Services Provider to carry out the duties described herein.

The Back Office is responsible for the following duties:

- Crosschecking counterparties confirmation documents for individual trade transactions to EBCE's own records of those transactions, and investigating and resolving exceptions;
- Ensuring settlements are made timely and in accordance with contract terms;
- Verifying and reporting compliance with procedures as reflected in the transaction tracking documentation;
- Ensuring that operations and systems can effectively and efficiently support the processing of approved transactions;
- Performing and supporting transaction allocations, invoicing and settlements;
- Development and maintenance of GHG Compliance Instrument tracking and allocation;
- Monitoring accounts receivable and payable;
- Verification of transaction data entry; and
- Preparing and maintaining written Back Office procedures.
- Disputing any charges from the ISO.

4.7. Auxiliary Functions

Other functions in support of and relevant to risk management are conducted by EBCE staff who are not directly including within the Front Office, Middle Office and Back Office functions. These include some contract administration functions, load forecasting and managing financial reserves.

Long term planning and forecasting of Energy supply requirements (long term supply plans) are developed by EBCE analytical support personnel who are not part of the Front Office transacting function.

The Finance and Administrative Services Department is responsible for preparation of the budget, and amounts billed for Approved Product transactions. Finance and Administrative Services Department staff also establish necessary financial reserve levels related to counterparty credit requirements for EBCE in general. These auxiliary functions may also be supplied to EBCE by EBCE's Wholesale Energy Services Provider.

5. Authorities, Limits and Prohibitions

5.1. Individual Trading Authority and Transaction Limits

All executed transactions shall conform to the policies set forth in the ERMP and these Regulations. It shall be the responsibility of the ROC, with approval of the Executive Director, to establish appropriate individual trading authority limits for the various staff involved in the Front Office function. All Middle Office and Back Office staff are strictly prohibited from executing any Approved Product transactions. The Middle Office shall confirm that the Front Office has informed EBCE's counterparties of changes in Front Office staff authorized to trade within seven (7) business days. Unless or except as recommended by the ROC from time to time, and approved by the Executive Director, trading authority limits for individual transactions shall be as outlined in Appendix 4 of these Regulations.

5.2. Permitted Transactions and Approved Products

The ROC is responsible for authorizing and approving all Approved Products that may be transacted by EBCE. Transacting Energy related products that are not authorized as Approved Products by the ROC is strictly prohibited, unless the ROC grants an exception in advance.

All transactions shall conform to the following general principles:

- Be for an Approved Product;
- Be duly authorized and within risk limits, and shall not cause either aggregate or individual counterparty credit limits to be exceeded;
- Be executed with a counterparty with an approved credit limit;
- Shall utilize contract terms intended to minimize the risk of loss if a counterparty fails to deliver, take delivery or pay for transactions provided;
- Be executed and documented following standardized procedures; and
- Be in compliance with applicable laws, regulations and court orders.

Approved Products that have been authorized by the ROC are listed in Appendix 6 of these Regulations. Appendix 6 also contains certain limitations for each authorized Approved Product.

5.3. Unauthorized Transactions

Any member of staff who enters into an unauthorized transaction may be subject to disciplinary action up to and including termination of employment.

The following provides the minimum procedures for managing unauthorized transactions:

- If a transaction is unauthorized, the Executive Director shall determine the course of action. If the transaction involves market risk, the Executive Director may elect to either enter into a risk neutralizing transaction, or attempt to unwind the transaction with the original counterparty. However, the first alternative (offsetting transaction) only offsets market price; operational and credit risk may still exist. Unwinding the transaction would likely remove all risk from the trade.
- Once the corrective steps have been taken, the Executive Director shall review the transaction to ensure all risks have been offset and report the results in the Exception Report.

5.4. Process for Adding New Approved Products

All requests to add a new Approved Product to Appendix 6 must be analyzed by the Front Office, Middle Office, Back Office staff, and EBCE's legal counsel to determine what risks such product may create for EBCE, and what business needs exist that provide the basis for adding the new product to the Approved Products list. All requests to add a new Approved Product to these Regulations must be presented to the ROC for consideration, and if approved by the ROC shall be added to Appendix 6 as an Approved Product. Any product not listed as an Approved Product in Appendix 6 of these Regulations is considered to be a new product.

A report to the ROC recommending approval of a new Approved Product shall address the issues described in the New Product Approval Checklist contained in Appendix 5 of these Regulations. The

New Product Approval Checklist is a guideline for activities that should be performed in evaluating and mitigating the market and credit risks associated with use and deployment of new products.

Front Office staff have primary responsibility for developing the report to identify the business needs for the new Approved Product being requested, and an assessment of risks that EBCE may be exposed to by transacting the new Approved Product. Front Office staff are responsible for presenting the report to the ROC for consideration and approval. Primary responsibility may be delegated by Front Office staff to those individuals having special knowledge or expertise of the activity or new product type.

6. Systems, Tools and Training

EBCE employees (or supporting suppliers) who are authorized to perform energy risk management functions on behalf of EBCE shall be provided the necessary systems and tools to support all risk management processes, including:

- Access in real time to market activity, prices and other data;
- Systematically evaluating the financial condition, credit standing and ability to perform of other entities with whom EBCE does business;
- Analyze the trends of supply, demand, market prices and costs of service;
- Record transactions accurately and completely;
- Measure key indicators and risk parameters; and
- Generate complete and accurate management and financial reports.

Provision of funding shall be requested and made in the budgets submitted for each division that performs market risk management functions on behalf of EBCE, for the acquisition and maintenance of computer systems, software, communications equipment, data services and other analytical, measurement and reporting tools. Provision of funding shall also be requested and made in the budgets submitted for each EBCE division, which performs market risk management functions on behalf of EBCE for managers and staff to attend seminars and courses in risk management as required to comply with the ERMP and these Regulations.

7. Compliance Exceptions and Reporting

7.1. Compliance Exceptions

Compliance exceptions are actions which violate the provisions and/or requirements as set forth in the ERMP and these Regulations, and/or the procedures developed and approved by the ROC.

The following types of occurrences shall not be considered compliance exceptions:

- Losses incurred on wholesale transactions which were undertaken in compliance with the ERMP and these Regulations;
- Adverse changes in credit standing, financial condition or ability to perform of a wholesale trading counterparty which occur subsequent to the execution of a transaction or contract;
- Adverse changes in capital asset valuations, MTM exposures, or CVaR resulting from fluctuations in prices subsequent to the execution of a transaction or contract; and

- Actions compelled by order of regulatory authorities or by legislation, which are otherwise in violation of the ERMP, these Regulations, and/or related Procedures.

7.2. Exception Reporting

In the event a compliance exception occurs, the Executive Director is responsible for notifying the ROC within 48 hours after it is identified and ensure that the Front Office prepare a report (Exception Report) for the ROC at its next meeting. The Report shall identify the issue or violation, and discuss the alternative remedial actions, document the action taken in response, and describe the steps that will be taken to prevent a reoccurrence of the event. A summary of all exceptions shall be reported at least annually to the Board by the Executive Director.

8. Risk Management Methodologies

8.1. Measurement of Risks

EBCE measures risk by estimating how high or low future supply costs and revenues could be, given a particular portfolio position and specific confidence level of market price movements. These estimates apprise management as to the risks inherent in a particular position and are used to make decisions to accept that risk or to reduce the risk by changing the position or the portfolio management strategy going forward.

Volumetric variability is estimated as part of the load and resource forecasting process. Normal, High and Low scenarios are provided as part of the annual budget process. An updated load and resource forecasted balance is provided each month. Volumetric uncertainty shall be incorporated in the quantitative risk measures that EBCE tracks and reports on a regular basis. The financial consequences of volumetric risk depend upon both how actual loads and supplies compare to forecasts, and on market price variations.

Market price risk is measured by calculating forward price volatility (either using recent historical data for forward prices or market prices for options), and applying that volatility to the future to see how costs and revenues could change if there were an adverse market price movement.

Counterparty credit risk measures are captured in reporting of counterparty exposure and transaction limits.

Appendix 8 of these Regulations provides a more detailed description of EBCE's risk measurement methodology. Risk management reports that are presented to management and the ROC are described in Appendix 7 of these Regulations.

9. Risk Limit Structure

EBCE sets risk limits in order to mitigate risk exposure within the broad objectives of optimizing the value of EBCE's assets, and serving Participating Member loads at cost effective and stable prices. Transaction limits authorized in Appendix 4 shall comply with the requirements described in this Section 9.

Portfolio risk limits are expressed based on volume, duration, dollar value, and CVaR. EBCE will develop a path towards setting (1) volume limits and (2) VAR limits. Risk limits include: (1) qualification criteria for counterparties, including creditworthiness and required contractual provisions, (2) counterparty credit limits, and (3) preferred contractual terms. Counterparty credit risk limits are intended to monitor and contain potential losses due to counterparty default. This Section 9 also includes a brief discussion of risk monitoring and reporting requirements.

Risk limits may be employed to indicate either:

- An exception, which requires an Exception Report to the ROC;
- A warning, which indicates that a risk measure is outside of an acceptable tolerance band, and should be reported to the ROC promptly; or
- A standard, such as minimum qualifications or contract provisions.

Risk limits are subject to regular review and adjustment by the ROC as market conditions change. Risk limit metric methodologies and limits are further explained in Part II of these Regulations.

9.1. Basic Principles for Setting Risk Limits

The following set of basic principles shall guide the general approach to setting risk limits (including but not limited to credit exposure limits, contract duration, volume, and transaction limits):

- Enable staff to conduct required business effectively
 - Volume and dollar limits adequate to reliably meet physical and financial requirements at prevailing prices
- Reflect the risk-reward tradeoffs consistent with EBCE's risk tolerance
 - Duration, volume, dollar and exposure limits appropriate for associated risks
- Favor strong counterparty attributes
 - Creditworthiness and financial strength
 - Favorable contractual terms
 - Demonstrated performance
- Promote fair and competitive transacting process
 - Should not narrow field to a single supplier or unduly favor any supplier
- Promote diversification
 - Avoid too great a concentration of supply or exposure with any single supplier
- Facilitate operational flexibility
 - Allow for load uncertainty, resource uncertainty, and other contingencies
- Facilitate conformance to the ERMP and Regulations
 - Clear, measurable, consistent and enforceable
- Balance burden of monitoring and enforcing limits with value
 - Not so complex and cumbersome that it takes too many resources to manage

9.2. Portfolio Risk Limit Guidelines

Portfolio limits facilitate: (1) adhering to policies and procedures, (2) quantifying risk tolerance levels for risk monitoring, reporting and control, and (3) reducing operational risks.

Portfolio limits must take into account:

- Load and resource balance variability – monthly and seasonal variation;
- Load and resource balance uncertainty – confidence intervals around expected values;
- Minimum feasible wholesale transaction size – Approved Products are traded in large discrete package sizes; and
- Operational flexibility and constraints – customer responsiveness, system reliability.

Risk limits shall be reviewed and updated by the Middle Office and Front Office in conjunction with development of the long-term power supply forecast, as part of the annual budget process, or more frequently as deemed necessary.

9.3. Net Position Guidelines

Purpose: Net position guidelines specify the physical load and resource balance tolerance levels within which EBCE staff shall recommend transactions to comply with these Regulations, and to ensure that Approved Products are transacted to meet physical and financial load and resource balance requirements.

Applicability: Net position guidelines apply to Approved Product transactions that are one month in duration or longer. These transactions include all must-take, fixed-priced contracts, index-priced contracts¹, fixed-priced Call Options, supply from generating resources, and the long-term contracts.

For all other transactions:

1. Option transactions shall be excluded from the Net Position guidelines until exercised, but shall be included in transaction reporting to the ROC. Options to transact Approved Products that have been exercised, or any other transaction that commits EBCE to take delivery or commit resources, shall be included in the Net Position guidelines.
2. Put options that have not been exercised are not included in the Net Position guidelines as they reflect a potential short position and would understate the Net Position. Put option transactions shall be included in transaction reporting to the ROC.
3. Within-the-month Approved Product transactions are operational in nature, and require flexibility to balance hourly, daily, and weekly, and balance-of-month load variations. Net Position Limits guidelines do not apply to within-the-month transactions, but they are included in transaction reporting and total deliveries reported to the ROC.
4. Resource Adequacy capacity, GHG Compliance Instruments, transmission,

¹ A transaction priced based on an index rate that is directly offset with a matching transaction priced at the same index rate (e.g., a sales transaction that is directly offset with a like purchase transaction) shall be excluded from the calculation of net position.

transportation, ancillary services, basis, and storage requirements are set by reliability based technical standards, regulatory requirements, or maximum potential usage in order to reliably meet real-time and peak demand. Net Position guidelines do not apply to these Approved Products, but staff shall inform the ROC of the criteria used for estimating EBCE's needs.

5. Transactions of surplus or excess Approved Products made available through existing physical assets or contracts (e.g. due to hydro conditions) shall not constitute Speculation, but shall be reported to the ROC.

The net changes in physical position due to buy-sell transactions executed to offset positions with a counterparty, effect transportation or transmission transactions, or other approved purpose shall be included in the Net Position guidelines.

10.Risk Control Structure

10.1. Control Principles

EBCE will strive to conduct its energy risk management activities in accordance with best practices of the wholesale electric industry, but implementing such practices must be justified and balanced as to their costs and benefits. Processes and control systems must be in place that allow EBCE to identify, measure, monitor, control and track its risk exposures. These processes and control systems shall be consistent with the following risk management control principles:

- Appropriate segregation of duties and internal controls;
- Appropriate systems to ensure accurate and effective management reporting;
- Necessary resources in place to achieve management objectives;
- Attract and retain skilled and trained personnel;
- Cross-train and provide cross-coverage;
- Employees conducting Energy transactions who are free of conflicts of interest;
- Authority and approval delegation that is commensurate with accountability and capability;
- Performance measurement and reporting incorporate risk and return measures; and
- Ongoing monitoring of control effectiveness.

10.2. Functional Responsibilities

EBCE has integrated but segregated responsibilities to control risks in a manner consistent with the above control principles by means of clearly defined roles and responsibilities for the Front Office, Middle Office, and Back Office. Oversight functions are performed at an operational level by these offices, and managed at an executive level by the Board, Executive Director, and ROC. These functional responsibilities are described in detail in Section 4 of these Regulations. EBCE may utilize the services of its Wholesale Energy Services Provider for performing such functions.

10.3. Transaction Capture Process

All transactions² of Approved Products must be formally and officially documented by EBCE. Transaction capture procedures shall address all of the following elements:

- Authorization/Approval (e.g., participant authorization form as used in the market purchase program agreement);
- Competitive bidding;
- Commitment to the transaction;
- Recording the transaction;
- Confirming the validity of the transaction with the counterparty;
- Inputting the transaction into the deal capture system;
- Actual product delivery; and
- Billing and settlement.

10.3.1. Authorization/Approval

The appropriate authorizations and approvals must be obtained by Front Office staff prior to transacting Approved Products. Such authorizations may be in the form of predefined contractual authorizations, or as defined in the ERMP or these Regulations. EBCE shall develop protocols to address when the volume and/or VAR limits are not in compliance. If the limits are violated by a certain to-be-determined amount EBCE shall assemble the ROC for an emergency meeting. The ROC can choose to be flexible on the limits (within certain parameters) or require action. If it exceeds a certain amount it goes higher in the organization and to EBCE's board. Front Office staff shall obtain approval from duly authorized personnel (supervisor or higher) with specified *dollar and volume* limits as specified in Appendices 3, 4 and 5 before consummating any transactions for Approved Products.

10.3.2. Competitive Bidding

For Approved Product transactions scheduled for delivery further than one (1) week in advance, quotes for forward commitments, with the exception of exchange traded transactions, must be obtained competitively from available and approved counterparties, consistent with the size and type of transaction and counterparty. Alternatives are to be evaluated on an equivalent basis (similar quality, volume, duration and options), adjusted for such factors as transmission, losses, etc. Front Office staff must obtain quotes from at least two (2) qualified suppliers, if two (2) approved counterparties are available. Alternatives are to be evaluated on an equivalent basis (similar quality, volume, duration and options), adjusted for such factors as transmission, losses, etc.

Transactions occurring for delivery of product within one week or less, or exchange traded (e.g. NYMEX, ISO, ICE, etc.) transactions, do not require formal written documentation that two (2) quotes were obtained beyond what is entered in the deal capture system.

10.3.3. Commitment to the Transaction

A commitment is a legally binding contract between EBCE and a counterparty. The Front Office must

² Transaction for a term of balance-of-month or shorter are not subject to certain elements of the transaction capture process, as further described in the respective transaction procedures.

be the point of commitment for all Approved Product transactions. Final price commitments may only be made by authorized EBCE transacting personnel. Commitments shall be made verbally or electronically in the case of an electronic exchange. Transacting personnel shall only transact with counterparties who are listed on the Approved Counterparties List.

10.3.4. Recording the Transaction

All transactions must be recorded.³ Verbal commitments must be executed on a recorded telephone line when available, and shall be stored and maintained in accordance with EBCE's records retention policy. Electronic commitments must have an electronic audit trail. All transactions must be evidenced by a deal control system entry prepared in a timely manner. All transaction information shall be time and date stamped at the time of commitment.

10.3.5. Confirmation

A confirmation is a written document evidencing a verbal or electronic commitment made by EBCE transaction personnel. All confirmations must agree with the transacting person's commitments, as evidenced by phone records, deal capture system entries or other supporting documentation. All confirmations must be reviewed and confirmed by Back Office personnel for accuracy. The Front Office shall generate a written confirmation, when required, in any case where the counterparty does not provide or require a written confirmation. Any transaction that is not confirmed by the counterparty and approved by authorized personnel within five (5) business days after the transaction has been executed will be subjected to review and identification by the Middle Office. Using the confirmation, the Back Office staff shall review and confirm the consistency and accuracy of the deal capture system entry made by the Front Office staff. All written transaction confirmation shall be stored by EBCE consistent with EBCE's records retention policies. Written confirmations are not required for any transaction with a duration of less than seven (7) calendar days.

10.3.6. System Input

All transactions must be entered into the deal capture system, and the transaction information shall be maintained in accordance with EBCE's record retention policy. All transactions shall be entered into the dealcapture system by Front Office personnel. Deal capture system input shall be performed no later than the first business day after the deal was confirmed. Once a transaction is entered into the deal capture system, Back Office staff shall review the deal entry to confirm that the information entered into the deal capture system is consistent with the transaction confirmation, if required. If the data entry is found to be correct by Back Office staff, the deal shall be approved for accuracy. If the data entry is found to be inconsistent with the deal confirmation, Back Office staff shall notify Front Office staff to make the necessary corrections to the data entry stored in the deal capture system.

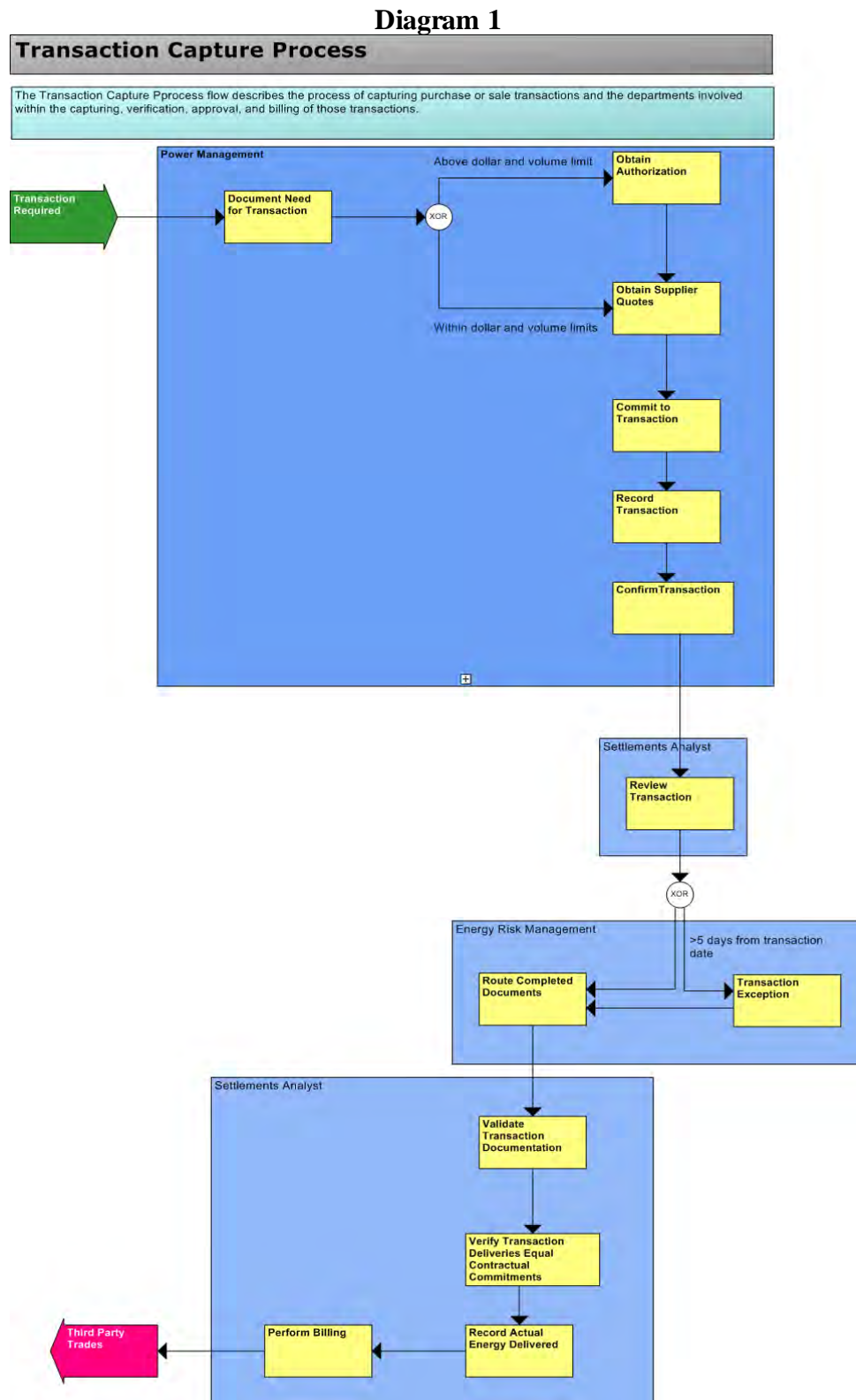
10.3.7. Billing and Settlement

Back Office staff ensures that bills are issued to counterparties with outstanding accounts receivable,

³ Real-time verbal and electronic commitment dates and times are recorded in the dispatch log. GHG Compliance Instruments are recorded in the CITTs system maintained by the California Air Resources Board.

and reviews bills for transactions to verify that the bills match the terms of the contract and the amount of product actually delivered (this process is generally referred to as the “checkout process”).

Diagram 1 below is a representation of the transaction capture process:



10.4. Management Reporting Framework

The key to energy risk management is monitoring of risks. Accurate and timely information must be provided to all parties involved in any aspect of energy risk management, to allow them to perform their functions appropriately. Reports can be categorized into three main areas:

1. Risk Monitoring – illustrate risks that are faced ahead;
2. Oversight – show compliance with policies, authorities or risk limits; and
3. Performance – compares actual past and present performance of the portfolios to appropriate budget and market benchmarks.

A complete list of management reports for each level of oversight is provided in Appendix 7 of these Regulations. These reports shall be prepared on a frequency as indicated in Appendix 7. New reports, or changes to existing report formats, may be recommended and approved by the ROC.

10.5. Internal Controls

Internal controls shall be based on proven principles that meet the stringent requirements of generally accepted auditing standards (GAAS), financial institutions and credit rating agencies. The required controls shall include all customary and usual business practices designed to prevent errors and improprieties, ensure accurate and timely reporting of results of operations, provide information pertinent to management and facilitate attainment of business objectives.

The required controls shall include the following:

- Segregation of duties between initiation, confirmation, monitoring and settlement transactions;
- Delegation of authority that is commensurate with responsibility and capability;
- Complete and precise capture of transaction and other data, with standardization of electronic and hard copy documentation;
- Meaningful summarization and accurate reporting of transactions and other activity at regular intervals;
- Regular independent compliance review to ensure that the ERMP and these Regulations are adhered to; and
- Active participation of senior management in the risk management process.

11. Conflict of Interest

All EBCE employees who are engaged in Approved Product transactions, counterparty credit evaluation, or oversight of the foregoing and are employed in any job classification listed in the EBCE Conflict of Interest Code are required to complete annual conflict of interest filings on FPPC Form 700, and disclose investments as required by that Code. They are required by that Code to abstain from participating in or attempting to influence any decisions that foreseeably would have a material financial effect on any such investment.

In addition to the foregoing disclosure requirement, EBCE employees engaged in Approved Product

transactions, counterparty credit evaluation, or oversight of the foregoing are barred from direct investment in any company with whom EBCE has consummated any Approved Product transaction within the last two (2) years. Further, such employees must divest existing direct investments in Approved Product counterparties prior to engaging in any negotiating, evaluating, transacting or oversight functions. The ban on investment and requirement for divestment applies regardless of whether or not the investment would be of sufficient size (\$2,000) to require disclosure on FPPC Form 700. As used in this section, a “direct” investment means an investment which, if of sufficient size, is of a nature that would constitute an “investment” pursuant to the California Political Reform Act.

EBCE employees supervising staff who are subject to this policy are responsible for routinely reviewing the most recent Form 700 of each such staff member for the purpose of identifying potential financial conflicts of interest. Updated copies of Form 700 shall be given to the supervisor/manager by the EBCE Conflict of Interest Filing Officer designated in the EBCE Conflict of Interest Code. The EBCE legal counsel will assist in reviewing these forms and providing legal advice in connection with such reviews on request.⁴

12. Policy Review

Prudence is required in implementing any and all policies and procedures. Market and industry conditions, technology and risk tolerances tend to change over time. Therefore, the ERMP and these Regulations should be reviewed annually, or as necessary, in order to make adjustments in response to changes in business objectives and/or industry conditions. All recommended amendments to the ERMP are to be reviewed by the ROC and presented to the Board for final review and approval. Changes to these Regulations shall be reviewed and approved by the ROC.

⁴ Non-staff ROC members shall not be subject to the requirements of Section 11 since their oversight functions are generally not transactional and company specific. Non-staff ROC members may be subject to conflict of interest compliance requirements at each of their own organizations.

Part II: Counterparty Risk Management

13. Organizational Philosophy Toward Counterparty Risk

13.1. Objective and General Risk Policy

EBCE's wholesale energy market activities are directed toward the goal of providing Energy, capacity, transmission and related services to its Participating Members at the lowest possible cost consistent with an acceptable level of risk. EBCE fulfills its supply obligations by using generating assets, or by contracting with counterparties for the purchase or sale of such assets on a long-term or short-term basis. Effective wholesale counterparty management and credit analysis is essential to mitigate the counterparty risks associated with Approved Product transactions in the Energy wholesale markets. The objective of the wholesale counterparty risk policy is to preserve EBCE's capital, liquidity and supply reliability by limiting counterparty credit risk and counterparty concentration to acceptable levels.

13.2. Expectations of the EBCE Board

Analytical procedures for granting open lines of credit and managing counterparty exposures are required. However, EBCE recognizes that the models used in managing credit risk are not predictive; they are explanatory. Credit risk management models cannot predict individual credit events or collective credit events. The Finance and Administrative Services Department is expected to manage counterparty risks to acceptable levels established by the ROC and approved by the Board. The Board recognizes that EBCE is generally a net buyer of Energy. Exposure to wholesale counterparty credit risk will normally be greater in periods of rising market prices due to higher replacement costs in a rising market. On the other hand, in high hydrological conditions, where excess generation may be available for sale on the wholesale market, EBCE is exposed to greater counterparty credit risk if counterparties fail to take delivery, or if they fail to pay for power delivered.

14. Counterparty Risk Definitions

14.1. Counterparty Risk

Counterparty risk is defined as the exposure to economic loss resulting from default by another party to a contract. Such risk exists in all financial and commodity markets and can be distinguished from other financial risks such as market risk, operational risk and regulatory risk.

Counterparty risk affects both contracts requiring physical settlement and those specifying monetary settlement. Contractual payments can result from purchases or sales. Under a sale, the counterparty owes cash and a receivable is created. The holder of the receivable is at risk of financial loss if the receivable is ultimately uncollectible. Under a purchase, the counterparty is obligated to deliver a product. However, the counterparty may also be required to reimburse the purchasing party for financial loss in the event of delivery failure. Therefore, the purchasing party is at risk of financial loss if the counterparty is unwilling or unable to reimburse for financial losses.

The ERMP states that for all fixed price Approved Product transactions, the counterparty must possess a public credit rating of at least a BBB- (or equivalent investment grade rating) by a nationally recognized statistical rating organization (NRSRO). EBCE staff may consider counterparties with a rating below investment grade or counterparties with no NRSRO rating on a case-by-case basis with the approval of the ROC. If ratings differ between NRSRO's, the lowest available rating will be used for underwriting purposes.

14.2. Credit Risk

For the purchaser of an Energy related product, credit risk is defined as the difference between the contracted price and current market price of a contracted product. If the current market price is greater than the contracted price, a positive MTM exists, thus exposing the purchaser to credit risk in the event of supplier default.

If the current market price is less than the contracted price, a negative MTM exists. The purchaser has credit exposure with a negative MTM if the deal is subject to termination or MTM damages. There is no credit exposure with negative MTM if the deal is subject to one-way liquidating damages and the purchaser is not the defaulting party.

If the seller has a positive MTM position in a transaction, the seller is exposed to profit risk in the event the counterparty defaults, where the seller would lose its opportunity to above market revenue. In contrast, if the seller has a negative MTM position in a transaction, the seller is exposed to liquidity risk and may be subject to margin calls if the MTM exceeds established credit limits.

15. Underwriting Standards

All transacting counterparties shall be reviewed for creditworthiness. This review shall include:

- A search of public debt and implied unsecured credit ratings as published by a NRSRO such as Standard & Poor's, Moody's Investor Services and Fitch;
- Review of at least the two (2) most recent years audited financial statements receiving an unqualified opinion from a certified public accounting firm; and
- Other information, as available, from news services, trade publications, financial websites, etc.

For transacting counterparties without NRSRO ratings, EBCE credit staff shall determine an implied rating according to EBCE's internally-developed methodology and rating scale. Transacting for all counterparties shall require an implied "investment grade" rating of BBB- or its equivalent, at a minimum. EBCE credit staff may consider counterparties with a rating below BBB- or its equivalent on a case-by-case basis. All sub-investment grade rated counterparties require ROC approval before transacting and may require credit assurances or other consideration.

16. Credit Risk Measurement

Credit risk exposure should be measured as: (1) current exposure, and (2) potential exposure. Current credit risk exposure to a single counterparty is defined as the sum of: (1) the dollar value of all amounts

invoiced and unpaid, and (2) the dollar amount of all uninvoiced deliveries. Potential credit exposure is the MTM value of all forward contracts from today forward, as reported by the business unit.

Total credit risk exposure is the sum of the variables shown in the formula below, less all offsetting amounts that are supported by legally binding netting agreements or available collateral. EBCE's credit exposure measurement is defined by the following formula:

$$\text{Credit Exposure} = \text{Current and Prior Month Sales (Net Sales}^5\text{)} + \text{MTM} - \text{Credit Enhancements}$$

In addition, potential credit risk exposure is captured by the CVaR statistic. The CVaR statistic represents the maximum dollar loss at a 95% confidence level within a certain time, due to volatility in market prices if the counterparty defaults. CVaR is a dollar estimate of the risk that potential changes in market price would result in increased credit exposure for all forward contracts. CVaR shall be presented as supplementary information for credit benchmarking. EBCE's CVaR calculation methodologies are documented in Appendix 8 of these Regulations.

17.Credit Enhancements

Customers or counterparties that do not meet the minimum requirements for an extension of an open line of credit, as set forth in Section 15 of these Regulations, must post at least one (1) of the following types of security prior to the execution of transactions:

17.1. Guarantees and Surety Bonds

Counterparties may provide a guarantee from a third party, or parties, which meets the creditworthiness requirements set forth in Section 15 of these Regulations. If a counterparty provides a guarantee, the amount of any open line of credit will be determined through an analysis of the financial strength of the guarantor. The guarantor will be considered secondarily liable for the obligations of the counterparty. In the event a surety bond is provided, EBCE will consider the surety bond as primarily liable for the obligations of the counterparty. All guarantees must be approved as to content and form by EBCE's legal counsel.

Preferred terms for guarantees include, but are not limited to:

- A statement that the guarantee is one of payment and not of collection;
- A statement that the guarantor agrees to pay the guaranteed obligations on the date due;
- A statement that the guarantor's obligations under the guarantee rank pari passu with its senior unsecured debt obligations;
- A statement restricting the guarantor's right to terminate the guarantee, and any termination must still guarantee existing exposures as they may exist;
- A statement that the guaranteed obligations are unconditional, irrespective of value, genuineness, validity, waiver, release, alteration, amendment, and enforceability of the guaranteed obligations, and a statement that the guarantor waives the right of set-off, counterclaim, etc;

⁵ Provided there is a netting agreement with the counterparty. Otherwise, it will be the receivable portion only.

- A statement that the guarantee reinstates if any guaranteed payment made by the primary obligor is recaptured as a result of the primary obligor's bankruptcy or insolvency;
- A statement that the guarantor waives its right to subrogation until the guaranteed obligations are paid in full;
- A statement that the guarantee is binding on successors of the guarantor and a statement that EBCE is a beneficiary of the guarantee;
- A statement that the guarantee will be interpreted under either New York or California law; and
- A statement that the guarantor has subjected itself to jurisdiction and service of process in the jurisdiction in which the guarantee is to be performed (i.e., State of California).

Exceptions to the above concepts and/or acceptance of guarantees from entities domiciled outside the U.S. or Canada require ROC approval.

17.2. Letter of Credit

Counterparties may provide an irrevocable Letter of Credit in an amount sufficient to cover the amount in excess of the credit limit approved by EBCE at the date the transactions are entered into (e.g., MTM in excess of credit limit). Letters of Credit must have a term of at least 45 days past the term of the transactions. Letters of Credit must be issued by a domestic bank (or domestic branch of a foreign bank) that has a senior debt rating of at least "A" or its equivalent from a NRSRO. Approved Banks should be monitored for any potential Letter of Credit concentration between EBCE and various counterparties.

Exposure to any single institution will be limited to 20% of EBCE's total credit exposure, unless exposure is derived from a few transactions whereby demanding Letter of Credits from several institutions would be unreasonable for the counterparty. If credit risk exposure is derived over the entire portfolio of transactions, the 20% rule will apply. Any exposures greater than 20% must be approved by the ROC. All Letters of Credit must be approved as to content and form by EBCE's legal counsel.

17.3. Prepayments

Counterparties may provide a prepayment or cash margin deposit in an amount that is sufficient to cover the related transactions. Discounts for prepayment, consistent with industry standards, may be applied to the sum owed as authorized by the Executive Director.

18. Quality Assessment

18.1. Counterparty and Credit Analysis

Middle Office staff are responsible for ensuring a standardized credit screening process for all counterparties. All counterparties must be reviewed for financial creditworthiness according to these guidelines.

Middle Office staff will submit a credit review report to the appropriate approval authority, depending on the level of credit requested, for consideration and action. For agency-rated counterparties, Middle Office staff may elect a rating similar to one derived by a NRSRO, and waive initial review

requirements, if the counterparty is recognized and established in the industry. As a result, a more stringent review process should be followed for those entities that do not possess a NRSRO rating and/or have marginal financial capacity.

All counterparty credit lines and credit reviews will be submitted to the appropriate authority level as authorized in Section 19 of these Regulations. ROC actions can result in the approval or rejection of a proposed counterparty, or in an amendment to credit limits approved under delegated approval authorities. Approved counterparties will be grouped into three tiers. A counterparty's tier status will be based on the credit evaluation matrix found in Table 1. More frequent monitoring may be required if a counterparty is subject to the possibility of a credit event (e.g., if their credit rating falls one full letter grade or greater, or if their credit rating falls below investment grade), or if industry factors dictate.

Table 1

	Credit Evaluation Matrix		
	Tier 1	Tier 2	Tier 3
Criteria	Bilateral master agreement or transactions of one (1) month or longer within past two (2) years	No greater than prompt month transactions within past two (2) years	No transactions in past two (2) years
Type of Trading	All	Prompt month or less	Day-ahead (Prescheduling time frame)/Real-time
Credit Evaluation Requirement	At least annually	At least biennially, or as needed	None
External credit and EDF ratings checked	For RFPs and at least annually	Annually	Annually
Credit Limit	See Section 19	\$500,000	\$100,000
Event Monitoring	On-going	On-going	On-going

18.2. Credit Limits

Once a counterparty has been determined to be creditworthy, a credit limit will be proposed. An open

line of credit may be extended up to the lesser of 5% of the counterparty's adjusted tangible net worth⁶ or EBCE's maximum counterparty credit limits. In the case of municipal or public organizations, an open line of credit may be extended up to 10% of average free cash flow⁷ for the prior two (2) years not to exceed EBCE's maximum counterparty credit limits.

<u>NRSRO/EBCE Internal Rating</u>	<u>Maximum Counterparty Credit Limits</u>
AA- and above	\$ 35 million
A+ to A-	\$ 25 million
BBB+	\$ 15 million
BBB	\$ 10 million
BBB-	\$ 5 million
BB+ and below	\$100,000 per Section 19.3

For example, if a municipal counterparty qualifies for a credit limit of \$10,000,000 based on the cash flow test (e.g., 10% of avg. free cash flow for past two (2) years), but only qualifies for an EBCE rating of BBB-, then the maximum policy limit allowed would be \$5,000,000.

Although a counterparty may qualify for a certain maximum credit limit, anticipated transaction volumes and other business factors may prompt the selection of a lower limit that is considered more appropriate. As a result, the credit limit methodology provides limit ceilings while allowing flexibility in response to normal business activities.

18.3. Concentration Limits

In addition to maintaining credit limits, EBCE staff shall strive to diversify transactions among counterparties. EBCE staff shall document the business reasons (e.g. differences in bid price, lack of other qualified suppliers, etc.) for awarding contracts to counterparties with high concentrations of credit exposure.

19.Approval Authorities

19.1. Credit Authorization

Approval authorities are based on the level of business experienced by EBCE on a historical and current basis within limits allowed under the Regulations. Authority to establish credit limits is segregated as follows:

Director of Procurement, Finance or Administrative Services:	Up to \$ 20Million
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⁶ Tangible Net Worth (TNW) = shareholder equity – goodwill – intangible assets – receivables from officers – investments in other trading companies – off-balance sheet liabilities, etc.

⁷ Free Cash Flow = net income + non-cash charges such as depreciation + or - changes in accounts receivable, inventory, prepaid expenses, accounts payable, and accrued liabilities – cash dividends (general fund transfer) + net borrowing – capital expenditure.

Executive Director
ROC:
Board:

Up to \$ 50 Million
Up to \$ 60 Million
\$ 60 Million +

The maximum amount of any open line of credit to be extended to any customer or counterparty shall not exceed \$50 million unless authorized by the ROC. If credit lines exceeding \$60 million are anticipated, approval by the Board is required.

19.2. Increases to Wholesale Counterparty Limits

Any increase to an existing open line of credit must have the written approval of the Director of Finance and Administrative Services, the Executive Director or the ROC, within the authorized limits stated in Section 19.1. A sign off sheet shall be used to ensure written approval according to the limits authorized by this Regulations.

19.3. Credit Review Exceptions

Wholesale counterparties not subject to the above credit review criteria include those associated with day-ahead and current day purchases where risk associated with market movements is minimal. Sales transactions within the day-ahead and current day can be consummated with a counterparty that has not been assigned a pre-approved credit limit if the counterparty maintains at least a BBB-/Baa3/BBB- rating from an NRSRO. Such transactions may not exceed \$250,000 per counterparty.

If a counterparty or guarantor does not maintain any NRSRO rating, and if a counterparty credit review has not been performed in the past 24 months, a policy limit of \$100,000 in aggregate net receivables per counterparty may be authorized, with the approval of the Executive Director, until a formal review can be completed. These individual non-rated counterparty limits are subject to a total net receivable portfolio limit not to exceed \$1,000,000, in aggregate.

20. Wholesale Credit / Counterparty Management

20.1. Monitoring and Reporting Exposures

Middle Office staff are responsible for monitoring and reporting on the risk management program. A list of reports, which document trade positions, risk exposure, authorization and policy compliance, may be found in Appendix 7 of these Regulations. The credit exposure for each customer or counterparty described in these Regulations may be monitored according to concentration in the following areas: credit rating, counterparty, region, contract type, contract term and MTM exposure.

Middle Office staff are also responsible for communicating this information to management under the timelines outlined in Appendix 7 of these Regulations, and for establishing a violation reporting process to document exceptions to the ERMP or these Regulations. Exception Reports will document the nature of exception, and the actions taken to correct exceptions.

The credit risk reporting system should be integrated with the transaction processing system. This is generally an extension of the concept that credit risk assessment and reporting should be supported by

the normal transaction processing system. The credit system, should be integrated with the deal capture system and should not be a stand-alone system, or an add-on with manual interface.

20.2. Master Enabling Agreements

The use of master enabling agreements⁸ to document trading relationships with counterparties is considered to be the preferred practice and should be followed whenever reasonably possible. The general form of such master enabling agreements shall be approved by the Board upon recommendation of the ROC before any such master enabling agreement is used for any individual counterparty transaction. Transactions entered into under such contracts and agreements are subject to the requirements of these Regulations, and limited to Approved Products. The department managers are responsible for ensuring that master enabling agreements are developed in conjunction with legal counsel review, approved by the Board and used for the following transactions:

- The Western Systems Power Pool (“WSPP”) Agreement may be used as the master agreement for transacting Approved Products with WSPP members. The WSPP Agreement applies to all transactions between WSPP members unless the parties to a transaction expressly opt out of the WSPP Agreement.
- The Edison Electric Institute (“EEI”) Agreement, or its equivalent, as modified by a set of Board approved special provisions, may be used as the master agreement for transacting Approved Products. The EEI Agreement provides for an array of reciprocal credit and collateral requirements for each party, and includes negotiated provisions as specified on a “Cover Sheet”. The EEI Agreement can also be supplemented with specific annexes (e.g., Credit Annex, Collateral Annex, REC Annex).
- Transmission transactions shall be consummated under an Open Access Transmission Tariff or Board approved bilateral agreement.
- Master The International Swap Dealers Association (“ISDA”) Agreement, or its equivalent, may be used as the master agreement for transacting financial based Approved Products.

A master enabling agreement executed by EBCE and a counterparty provides the general terms and conditions for all transactions entered into with that counterparty. All master enabling agreements are to be executed and entered into in accordance with the ERMP and these Regulations, and with applicable EBCE policy and procedures.

Netting agreements should be incorporated into all counterparty agreements and transactions.

20.3. Premium Surcharge on Counterparties Without Master Enabling Agreement

Master enabling agreements require credit and performance assurances from a counterparty that provide protection against counterparty credit risk. In the event EBCE desires to transact with a counterparty without such assurances, a premium surcharge shall be imposed on the counterparty’s bid to compensate for its increased credit risk and allow for comparison of the relative prices, taking into account the varying credit risks which might be incurred. The following formula shall be used in calculating the surcharge:

⁸ The form and content of each master agreement must be approved by the Board.

$$\text{Premium Surcharge} = Edf * Fwd * 1.645 * \sigma$$

Where: (i) *Edf* is the expected default frequency of the counterparty, (ii) *Fwd* is the current forward price, (iii) σ is the market implied volatility (or standard deviation) of the commodity price, and (iv) 1.645 represents the number standard deviations where the price falls at a 95% confidence level.

Example of Premium Surcharge Calculation

A counterparty with a master enabling agreement where EBCE has accepted changes to its preferred terms, is bidding on EBCE's RFP for a NP-15 peak Energy product for the 3rd quarter. The current market forward price for the product is \$50/MWh, market implied volatility is 40%, and the expected default frequency for this counterparty is 0.55%. Therefore, a premium of \$0.18/MWh ($0.0055 * 50 * 1.645 * 0.4$) should be added to the counterparty's bid price for comparison with other bids.

20.4. Margin Calls

If a counterparty has exceeded a credit limit, the Middle Office is responsible for initiating a margin call if such action is authorized under the applicable master enabling agreement. Calling margin may include a request for cash collateral or other credit enhancement (i.e., letter of credit, etc.). A margin call is necessary when counterparty credit exposure exceeds an established credit limit. The appropriate timing of a margin call is not dictated by these Regulations. However, factors such as counterparty financial capacity, volume of business, overall portfolio concentration and market conditions should be considered. A margin call should be considered necessary if credit exposure exceeds the counterparty's limit by more than one ratings notch⁹. The same would apply if the counterparty suffers a ratings downgrade.

EBCE as a buyer or seller may be exposed to margin calls from counterparties. Middle Office staff must be aware of collateral thresholds assigned to EBCE by counterparties, and monitor these limits no less than monthly, and shall keep the Executive Director informed in the event of market volatility. EBCE may be exposed to margin calls if a significant level of purchases or sales is reached.

20.5. Transaction Authority

No new transactions are to be entered into with counterparties that have exceeded their credit limits unless: (1) the new transactions are used to mitigate (offset) existing exposure, and (2) if those transactions have prior approval of the Executive Director, or ROC within authorized limits as established in this Regulations.

21. Segregation of Duties

Controls over counterparty inputs and systems operations are of particular importance in ensuring the integrity of data used in counterparty risk control and management. In all cases the Middle Office will be responsible for managing the counterparty review and ratings process and all counterparty reporting. Front Office staff is responsible for recommending new counterparties to the Middle Office for review and approval.

⁹ Notch as referenced by Nationally Recognized Statistical Rating Organization (e.g., from BBB to BBB+ represents one notch).

APPENDIX 1

DEFINITIONS

1. Definitions

Whenever used in these Regulations, the following terms shall have the following respective meanings, provided, capitalized terms used in these Regulations that are not defined in this Appendix 1 shall have the meaning indicated in Appendix A Master Definition Supplement of the CAISO Tariff:

- 1.1. “Approved Counterparty List” is a list of the active trading counterparties that have been authorized for trading, and that have been assigned an approved credit limit by the Middle Office or ROC.
- 1.2. “Approved Product” means transactions types or products that are authorized pursuant to these Regulations, as specifically identified in Appendix 6.
- 1.3. “Balance-of-Month Transaction” means a purchase or sale of electric Energy, capacity and/or other related attributes for a term not greater than one month to be performed or delivered within the current or next succeeding calendar month.
- 1.4. “California Independent System Operator Corporation” or “CAISO” means the non-profit public benefit corporation responsible for the provision of fair and open transmission access, and maintaining reliable and efficient operation of that portion of the electric grid contained within its defined balancing authority area, pursuant to the California Public Utilities Code, or its successor entity.
- 1.5. “CAISO Tariff” means the CAISO FERC Electric Tariff.
- 1.6. “Call Option” means an option that gives the buyer (holder) the right, but not the obligation,
to buy a futures contract (enter into a long futures position) for a specified price within a specified period of time in exchange for a one-time premium payment. It obligates the seller (writer) of an option to sell the underlying futures contract (enter into a short futures position) at the designated price, should the option be exercised at that price.
- 1.7. “Cap and Trade Program” means CARB’s Regulation for the California Cap on Greenhouse Gas Emissions and Market-Based Compliance Mechanisms as set forth in title 17, California Code of Regulations, chapter 1, subchapter 10, article 5 (commencing with section 95800), as such may be amended from time to time, or
(ii) other GHG compliance obligations, including but not limited to, federal, regional, state, or local jurisdictions.
- 1.8. “CARB” means the California Air Resources Board, or its regulatory successor.

- 1.9. “CARB Offset Credit” means a tradable compliance instrument issued by CARB that represents a GHG reduction of GHG removal enhancement of one metric ton of carbon dioxide equivalent.
- 1.10. “Commercial Compliance Policy” means the Commercial Compliance Policy adopted by the Board, as such may be amended from time to time.
- 1.11. “Congestion Revenue Right” or “CRR” means a financial instruments made available through the CAISO’s CRR Allocations and Auctions. CRRs are acquired primarily for the purpose of offsetting integrated forward market transmission congestion costs that are incurred in the day-ahead market on CAISO managed transmission paths.
- 1.12. “Cost of Value at Risk” or “Cost VaR” means a calculation that summarizes the expected maximum “cost” exposure over a target horizon within a given confidence level.
- 1.13. “Counterparty” means a party on either side of a transaction (i.e., purchasing counterparty as opposed to a selling counterparty).
- 1.14. “CPUC Decisions” means, to the extent still applicable, CPUC Decisions 04-01-050, 04-10-035, 05-10-042, 06-06-064, 06-07-031, 07-06-029, 08-06-031, 09-06-028, 10-06-036, 11-06-022, 12-06-025, 13-06-024, 14-06-050 and subsequent decisions related to resource adequacy, as may be amended from time to time by the CPUC.
- 1.15. “CRR Allocation” means the process of allocating CRR source-to-sink combinations, both annually and monthly, based on nominations by registered Candidate CRR Holders.
- 1.16. “CRR Auction” means the awarding of bids for CRR source-to-sink combinations, by the CAISO, made by Candidate CRR Holders based on criteria established by the CAISO.
- 1.17. “CVaR” means credit value at risk.
- 1.18. “Board of Directors” or “Board” means the EBCE Board of Directors, which is made up of an elected official from each of the participating jurisdictions and one representative from the EBCE Community Advisory Committee.
- 1.19. “EBCE” means East Bay Community Energy.
- 1.20. “Emission Allowance” means a limited tradable authorization to emit up to one metric ton of carbon dioxide equivalent.
- 1.21. “Energy” means an electric charge that lets work be accomplished.
- 1.22. “ERMP” means the Energy Risk Management Policy.

- 1.23. "FERC" means the Federal Energy Regulatory Board, or its regulatory successor.
- 1.24. "Forward Power Transaction" means an Energy transaction that starts beyond the Balance-of-Month.
- 1.25. "Executive Director" means the Executive Director of EBCE.
- 1.26. "Greenhouse Gas" or "GHG" includes, but is not limited to, carbon dioxide ("CO₂"), methane ("CH₄"), nitrous oxide ("N₂O"), sulfur hexafluoride ("SF₆"), hydro fluorocarbons ("HFCs"), perfluorocarbons ("PFCs"), and other fluorinated gasses.
- 1.27. "GHG Compliance Instrument" means any instrument, including but not limited to, Emission Allowance, CARB Offset Credit, or Sector-Based Offset Credit that can be used to fulfill a GHG emissions compliance obligation.
- 1.28. "Letter of Credit" means a document, typically from a bank, assuring that a seller will receive payment up to the amount of the letter of credit, as long as certain documentary delivery conditions have been met.
- 1.29. "Long Term Transaction" means a purchase or sale of natural gas, electric power, capacity, transmission and/or other related attributes to be performed or delivered for a duration longer than a Balance of Month Transaction.
- 1.30. "MTM" means Mark-to-Market. MTM is a measure of the fair value of accounts that can change over time, such as assets and liabilities. MTM aims to provide a realistic appraisal of an institution's or company's current financial situation. The accounting act of recording the price or value of a security, portfolio or account to reflect its current market value rather than its book value.
- 1.31. "Natural Gas" means a flammable gas, consisting largely of methane and other hydrocarbons, occurring naturally underground (often in association with petroleum) and used as fuel.
- 1.32. "NRSRO" means nationally recognized statistical rating organization.
- 1.33. "Participating Member" means a participating jurisdiction within the East Bay Community Energy program, and which receives certain wholesale and retail services from EBCE.
- 1.34. "Prompt month" means the next full calendar month beyond the current month.
- 1.35. "Put Option" means an option that gives the buyer, or holder, the right, but not the obligation, to sell a futures contract at a specific price within a specific period of time in exchange for a one-time premium payment. It obligates the seller, or writer, of the option to buy the underlying futures contract at the designated price, should an option be exercised at that price.

- 1.36. “Regulations” means these Energy and Counterparty Risk Management Regulations.
- 1.37. “Renewable Energy Credit” or “REC” is the (i) right to the environmental benefits from generating electricity from renewable Energy sources that can be sold and traded and the owner of the REC can legally claim to have purchased renewable Energy, or (ii) as set forth in California Public Utilities Code §399.12, as such can be amended from time to time.
- 1.38. “Renewable Energy Products” means any combination of Energy, capacity, RECs, or other environmental attributes produced by a generation facility or resource that is eligible to satisfy applicable renewable Energy mandates as defined by federal, state, or local jurisdictions.
- 1.39. “Resource Adequacy” means the resource adequacy requirements established for load serving entities by the their respective governing body having jurisdiction.
- 1.40. “ROC” mean the Risk Oversight Committee.
- 1.41. “Sector-Based Offset Credit” means a credit issued from a sector-based crediting program once the crediting baseline for a sector has been reached.
- 1.42. “Speculation” means the practice of engaging in risky financial transactions in an attempt to profit from fluctuations in the market value of a tradable good such as a financial instrument. Speculation can in principle involve any tradable good or financial instrument.
- 1.43. “Transmission” means the bulk transfer of electrical Energy, from generating power plants to electrical substations located near demand centers. This is distinct from the local wiring between high-voltage substations and customers, which is typically referred to as electric power distribution.
- 1.44. “Wholesale Energy Services Provider” means the Northern California Power Agency (“NCPA”).

APPENDIX 2

RISK OVERSIGHT COMMITTEE

1. Roles and Responsibilities

1.1. ROC Members

All members of the ROC have the following responsibilities:

- Oversee implementation of risk strategy of EBCE as such pertains to transaction activities;
- Advise the Executive Director on educational needs on risk management at all levels within EBCE;
- Review proposed changes to the ERMP and these Regulations by other ROC members;
- Attend all ROC meetings or ensure that fully-briefed alternates attend, including meetings requested by a member requiring ROC approval in a timely fashion; and
- Monitor key activities of the Front Office, Middle Office and Back Office as such pertain to transaction activities.

1.2. ROC Advisors

EBCE's legal counsel has the following responsibilities:

- Reviewing and approving all forms of contracts used by EBCE to consummate transactions of Approved Products;
- Determining what legal documentation is required, and proposing monitoring and review procedures to ensure legal and regulatory compliance with the ERMP and these Regulations; and
- Reviewing processes and procedures associated with transaction activities to ensure legal compliance with all local, state and federal laws and regulations.

ROC members' and all advisors' roles and responsibilities are detailed in the Table 2 below:

Table 2
Roles and Responsibilities

Responsibility	Executive Director	Director Admin. Services	Director Power Resources	Middle Office	Legal Counsel
Oversee implementation of EBCE's risk strategy.	✓	✓	✓	✓	
Verify to ROC that rules related to transacting authority and speculations are complied with by Front Office.				✓	
Verify to the ROC that all adopted Regulations are consistent with applicable law.					✓
Verify that Front Office and Back Office staff are in compliance with all policies and regulations.				✓	
Verify that the ROC is provided the most accurate forecast possible of market trends and a summary of stress testing and sensitivity analysis.				✓	
Ensure to the ROC that operational performance of the Front, Middle and Back Offices are in conformance with policies approved by the Board.	✓			✓	
Verify to the Executive Director that operational performance of the Front, Middle and Back Offices are in conformance with the ERMP and these Regulations.		✓	✓	✓	
Verify that the ROC is provided with an accurate report on Front Office operations.			✓	✓	
Ensure to the ROC that the Middle Office reporting is accurate and in compliance with Middle Office policies.		✓		✓	
Verify that the ROC is provided an accurate reporting of all transactions.				✓	
Ensure that the ROC is provided accurate reporting of risk measures and performance monitoring (including MTM, Cost VaR, CVaR) and compliance (limits, transaction authority, transaction type, instrument type).				✓	
Verify to the ROC that all approved contracts and enabling agreements have followed a process that is consistent with applicable law.					✓
Ensure that the ROC is provided with an accurate report on all Middle Office operations,		✓		✓	

especially with regard to market and credit exposure.					
Ensure that the ROC is provided with accurate reports on any transactions which exceeded limits, and proposed actions on strengthening compliance procedures and recommendations for corrective action.				✓	
Ensure that the ROC is provided with reporting that is consistent with the ERMP and these Regulations.	✓	✓	✓	✓	
Provide accurate reports to the ROC on any discrepancies between the Back Office settlement and reconciliation with the deal capture system.		✓			
Provide accurate reports on the risk management program to the Board.	✓	✓	✓	✓	
Provide timely support and legal advice to the Front, Middle and Back Office operations and to the ROC.					✓
Provide accurate reports on trading operations and all transactions carried out since last ROC meeting and summary of current and future transaction strategies.			✓		
Provide accurate reports on operational performance of Front and Back Offices with strategic objectives and provide solutions for violations.				✓	
Review proposed changes to ERMP by other ROC members.	✓	✓	✓	✓	✓
Advise ROC on analysis of potential enabling agreements with regard to Front and Back Office operations.	✓	✓	✓		
Advise ROC on consideration of pending enabling agreements and large contracts with regard to market and credit risk.			✓	✓	
Advise ROC on proposed portfolio and trader limits.	✓	✓	✓	✓	
Attend all ROC meetings or ensure that a fully briefed delegated representative is present.	✓	✓	✓	✓	✓
Advise ROC on proposed changes to Middle Office procedures.		✓		✓	
Provide ROC with “market view” of future market conditions and results of market models.			✓		
Provide ROC with “market view” of financial market conditions and implications on an as needed basis.		✓			

Monitor key activities of Front, Middle and Back Offices.		✓	✓	✓	
Present ROC-approved recommendations for changes to ERMP for consideration by the Board.	✓				
Brief the ROC on transaction operations with special regard to transacting authority and speculation issues.		✓	✓		
Advise ROC on education needs on risk management at all levels within EBCE.	✓	✓	✓	✓	✓
Serve as Chairperson for ROC.	✓				
Serve as official spokesperson for the ROC reports to the Board.	✓				
Determine documentation and legal review requirements to all processes are consistent with applicable law.					✓
Ensure Front and Middle Offices, and Legal Counsel participate on new product or transaction type development team.		✓	✓	✓	✓
Propose change to Front and Back Office Regulations.	✓	✓	✓	✓	✓

APPENDIX 3

AUTHORIZED CRR TRANSACTING GUIDELINES

1. Congestion Revenue Rights Transacting Guidelines

Congestion Revenue Rights are used by CAISO market participants to hedge against the cost of congestion associated with delivering resources to serve load obligations within a locational marginal price (LMP) market.

1.1. CRR Allocation Process

EBCE staff will participate in the CRR Allocation and Auction markets as follows:

EBCE staff nominates its CRRs during the allocation process in general conformance with the following methodology:

- CRR nominations are limited by the seasonal/monthly eligible quantities.
- CRR valuation of source/sink combinations are based upon the historical congestion component of the LMP. If access to an Integrated Forward Market (IFM) pricing model becomes available, simulated prices may be used in the CRR valuation process.

CRRs that have EBCE generation or scheduling points as sources, and the DLAP_PGAE-APND pricing node as the sink, are nominated first when the expected average congestion is statistically greater than zero, and no one historical period exhibited large negative congestion. Nominated amounts are equal to or less than expected generation in order to create a perfect or partial hedge. When expected congestion is low, nominated amounts are low and increase as expected congestion increases.

- After exhausting possible EBCE source/sink pairs, then nominations may be made from non-EBCE source/sink combinations that statistically have positive average congestion across historical periods with, no substantial negative congestion, as follows:
 - Rank the CRRs by congestion value.
 - Nominate the highest valued CRRs first, working down the possible Source-Sink combinations until the seasonal/month eligible quantities are exhausted.
 - Avoid large positions at any one non-EBCE sourced CRR.
 - Avoid clustered CRRs (e.g., source CRRs in the same geographic area that would expect to have the same or similar congestion component price).
- Avoid nominating both EBCE and non-EBCE sourced CRRs when data and experience shows that the CRR will not clear the allocation feasibility test.
- Once the above selection criteria results in a nomination portfolio, and prior to final submission, EBCE stress tests the portfolio on historical data for any large negative single period positions and if found removes that position prior to submission.

1.2. CRR Auction Process

EBCE staff bids into the CRR Auction in general conformance with the following methodology:

- Bids are made only to unwind CRRs obtained in the allocation process that are non-hedged, or are expected to have a negative value due to operational changes.
- Prices on the bid curves start at zero and go negative.
- Bids that clear in the auction result in revenue to EBCE and reduce overall risk by unwinding existing un-hedged allocation portfolio positions.
- Auction revenue is left in the EBCE CRR collateral account until the monthly/seasonal period is over.

APPENDIX 4

AUTHORIZED APPROVED PRODUCT TRANSACTION LIMITS

1. Approved Product Transaction Limits

1.1. Executive Director

The Executive Director is assigned the following primary responsibilities and transactions limits:

- Developing and approving all long-term supply strategies. Approval authority for long-term strategic plans and modeling parameters is not limited by fiscal constraints.
- Approval of financial authority limits associated with Approved Product transactions as recommended by the ROC.
- Authority for individual transactions as authorized under Board approved agreements or resolutions.
- Approval authority for Approved Product transactions up to, but not greater than, 115% of a Participating Member's annual load forecast, including executed fuel transactions that have been made to support generation operations up to 115% of load.
- All optimization strategies, statistical/procedural risk management methods (including risk tolerances), and resulting exposures.
- Approval of premiums and terms associated with the use of financial instruments on a case-by-case basis.

1.2. Director of Power Resources

The Director of Power Resources is assigned the following primary responsibilities and transaction limits:

- Approval authority for Approved Product transactions up to, but not greater than, 115% of a Participating Member's annual load forecast, including executed fuel transactions that have been made to support generation operations up to 115% of load.
- Authority to enter individual transactions with a term not to exceed 24 cumulative months, and not to extend past 60 consecutive months from the calendar month following the date of the transaction.

1.3. Scheduler and Planner (EBCE's Wholesale Energy Services Provider)

- Planning functions to determine the appropriate transactions necessary to maintain load/resource balance from day-ahead to Balance-of-Month in duration, and prompt month beginning 10 days prior to the conclusion of the current month.
- Approval authority for Approved Product transactions up to, but not greater than, the hourly peak load forecast, including executed fuel transactions that have been made to support generation operations, or to support economic optimization of generation assets.

- Authority to enter individual transactions with a term not to exceed balance-of-month, and prompt month beginning 10 days prior to the conclusion of the current month. Transacting is limited to variability between supply requirements and available resources.

Approved Product Transaction Limits Summary

	Executive Director	Director of Power Resources	Scheduler / Planner EBCE Wholesale Energy Services Provider
Transaction Term Limits:	As authorized under Board approved resolutions, programs or project agreements.	Transactions for a term up to 24 cumulative months, within the next 60 consecutive months.	Day-ahead to balance-of-month. Prompt month beginning 10 days prior to conclusion of current month.
Transaction Volume Limits:	Approved Product volume limits up to 115% of annual load forecast.	Approved Product volume limits up to 115% of annual load forecast.	1. Approved Product volume limits up to Hourly peak load forecast. 2. Transacting limited to variability between load requirements and available resources. 3. Fuel transactions for power plant consumption limited to volumes necessary to support generation operations up to 115% of load.

APPENDIX 5

NEW PRODUCT DEVELOPMENT PROCEDURES

1. New Product Development

When the Front Office staff request to transact a new product type, instrument or strategy, several control processes must take place to ensure EBCE can identify, manage, control and report on the risks from the new transaction.

The process for submitting a request for a new Approved Product type is as follows:

1. The Front Office staff notifies Middle Office staff of his/her desire to enter into a new type of transaction. The Front Office staff are responsible for reviewing the transaction details, including all the key risk, pricing and operational elements of the transactions with Middle Office staff. Middle Office staff assume responsibility for undertaking all the risk and processing implications of the proposed transaction.
2. The Front Office staff is responsible for preparing a new product report for review and consideration by Middle Office staff. This report requires the Front Office staff to document all of the risk attributes of the transaction, and how they will be controlled (primarily focusing on market and credit risk).
3. Middle Office staff will review the new product report and begin the process of determining EBCE's ability to record, process and manage the transaction.
4. Middle Office staff first ascertains if the Front Office staff has the ability to accurately price the transaction. Secondly, Middle Office staff determines whether the risk of the transaction can be accurately measured. In either case, if the Front Office staff does not have the capability to price or measure the risk of the transaction, the Front Office staff is notified, and the Front Office staff must discuss the model development or purchase options with the Middle Office staff before the transaction can be authorized.
5. If the Front Office staff can price and model the risk of the new product, then the Middle Office staff will evaluate the Front Office's operational readiness to execute the transaction. The Middle Office staff will also evaluate the Middle Office's and Back Office's readiness to transact the new product. If any outstanding issues or concerns are identified by the Middle Office staff as part of the review, the issues or concerns identified must be resolved prior to transacting the new product.
6. The Middle Office staff then gathers all of the new product report summaries, and prepares a written recommendation to the ROC for consideration and approval. This written recommendation will consider whether or not the risks and potential control considerations, if any, warrant entering into the new product type.

New Product Approval Checklist

Risk/Task to be Completed During the Analysis	Primary Accountability
Business Strategy	
Sponsor new strategy	Front Office
Understand and document the economics of the new strategy	Front Office
Define the resource requirements for the new product	Front Office
Regulatory and Legal Risks	
Identify applicable California and local regulatory restrictions for product or business	Legal Counsel
Verify counterparty power and authority to enter into activity	Legal Counsel
Determine what legal documentation is required	Legal Counsel
Propose monitoring and review procedures to ensure legal/regulatory compliance	Legal Counsel
Designate the supervisor responsible to ensure that the product is sold only to counterparties for which it is suitable	Front Office
Determine if sufficient resources are available to support regulatory and legal requirements	Front Office
Market Risks	
Identify and analyze market risk	Front Office/Middle Office
Specify management's intention (Hold positions, actively trade or hedge)	Front Office
Propose fair market value and risk measurement methodology	Middle Office
Determine hedging approach	Front Office
Establish product trading limits	Middle Office
Determine impact on total position limits	Middle Office
Establish special interim limits on control the new product expansion in a measured, granular manner	Middle Office
Define and recommend management reporting requirements	Middle Office
Present report format for communication of positions on a timely basis	Front Office
Check if the new product involves commitments, guarantees, contingencies or any other off-balance sheet items	Middle Office
Credit Risks	
Identify and analyze credit risk of product	Middle Office
Develop methodology for capturing facilities and counterparties in the credit reporting system and measuring credit risk and concentration exposures	Middle Office
Define procedure for monitoring credit exposure	Middle Office
Identify target counterparties, determine suitability and request credit facilities	Middle Office
Determine proper procedure for perfecting collateral, netting agreements	Middle Office
Recommend maximum credit exposure limits for counterparties	Middle Office
Develop capability to report daily/weekly credit limit compliance	Middle Office
Check if the new product involves commitments, guarantees, contingencies or any other off-balance sheet items	Middle Office
Operational Risks	
Verify consistency with ERMP	Front Office/Middle Office
Define transaction tracking plan and procedures	Middle Office
Develop required deal sheet modifications	Front Office
Settlement procedures – how will transaction payment/billing be handled?	Back Office
Authorizations/approvals – what approval levels or delegation of authority is required?	Front Office/Middle Office
Develop procedure for transacting from start to finish	Front Office/Middle Office/Back Office

Note: Advice services in areas such as valuation, market/credit risk management, legal review, accounting/tax may also be sought and presented as part of this process.

APPENDIX 6 APPROVED PRODUCTS

1. Approved Products

The Energy and Energy related products that EBCE is authorized to transact are as follows:

Approved Products	Pre-Approved Examples	Authorization
1. Long Term Transactions for Energy	<ul style="list-style-type: none"> • Purchases of Energy to cover the forecasted supply shortage of the Participating Members • Sales of Energy amounts that are forecasted to be surplus to a Participating Member's need • Liquidating "in the money" and "out of the money" transactions for optimization in accordance to a dual volume-VAR framework. 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
2. Balance-of-Month Transaction for Energy	<ul style="list-style-type: none"> • Energy purchases/sales within defined term and volume limits • Loss of generation • Loss of transmission • Forecasting errors 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
3. Day-Ahead and Real-Time Power Transactions Through a BAA (e.g., CAISO)	<ul style="list-style-type: none"> • Purchasing Energy from the CAISO day-ahead and/or real-time market to serve load • Selling Energy into the CAISO day-ahead and/or real-time market from generation resources 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
4. Purchase/Sale of Capacity	<ul style="list-style-type: none"> • Short-term or forward purchases of capacity products (e.g., Ancillary Services and Resource Adequacy products) • Short-term or forward sales of capacity products (e.g., Ancillary Services and Resource Adequacy products) 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
5. Purchase/Sale of Physical Call Options	<ul style="list-style-type: none"> • To cover potential supply deficiency due to unpredictable weather conditions (e.g., hydrological forecast error) • To balance load and resources in an illiquid market • To provide a hedge against a Participating Member's net open position 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.

	<ul style="list-style-type: none"> • Sale of a hedged (with physical plant) call option 	
6. Purchase/Sale of Physical Put Options	<ul style="list-style-type: none"> • To hedge a surplus resource position • Sale of an option for the sole purpose of unwinding a purchase if economically advantageous 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
7. Transmission	<ul style="list-style-type: none"> • Purchases/sales of firm and non-firm transmission capacity required for the delivery Energy 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
8. GHG Compliance Instruments	<ul style="list-style-type: none"> • Purchases of Emission Allowances from bilateral trades, and from the CARB administered Cap and Trade Program auctions and reserve auctions to satisfy actual and/or forecasted GHG emissions compliance obligations attributed to EBCE generation and scheduling activities (e.g. imports) 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
9. Renewable Energy Products	<ul style="list-style-type: none"> • Purchases of Renewable Energy Products to satisfy any requirement for such products under applicable law; Bilateral purchases are to be consummated under approved contract forms, follow approved credit risk limit procedures, and all other applicable risk management practices defined in this regulation • Sales of Renewable Energy Products for the sole purpose of eliminating a surplus 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations.
10. Congestion Revenue Rights	<ul style="list-style-type: none"> • Participation in the CRR Allocation and CRR Auction processes through the submission of nominations and/or bids in the Annual and/or Monthly Congestion Revenue Right Allocation and Auction processes administered by the CAISO 	<ul style="list-style-type: none"> • Authorized in accordance with the limits as set forth in these Regulations. • See Appendix 3 to these Regulations

APPENDIX 7 MANAGEMENT REPORTS

1. Management Reports

The following energy risk management reports shall be developed and presented as further described in the following table:

	Primary Responsibility			Report Frequency			
	Front	Middle	Back	Weekly	Monthly	Quarterly	Annual
Management Report							
Load and Resource Balance	X					X	
Portfolio Performance		X				X	
Portfolio Risk Exposure (Open Position Cost VaR)		X				X	
Exceptions Report		X				X	
Master Agreements	X						X
Policies Update		X					X
Transaction Position Detail		X			X		
MTM		X		X			
Credit Limit Status by Counterparty		X		X			
Trading Strategy	X				X		
Scenario Planning	X						X
Pending Agreements	X					X	
Energy Transaction Summary	X				X		
Non-Energy Transaction Summary	X				X		
Market Forecast	X				X		
Performance to Budget			X			X	
Procedure Exceptions			X		X		

1.1. Description of Management Reports

- Load and Resource Balance: Front Office report detailing total resources by source as compared to total load. Report shows supply surpluses and shortages. The Load Resource Balance report is developed weekly and presented to the ROC quarterly.
- Portfolio Performance: Middle Office report comparing the cost of the portfolio of contracts, to the market value of the portfolio (tracking what we paid for it to what it's worth now). This is the counterpart to the risk exposure report. The Portfolio Performance report is developed weekly and presented to the ROC quarterly.

- Portfolio Risk Exposure (Open Position Cost VaR): Middle Office report showing portfolio exposures by month due to price volatility. The Portfolio Risk Exposure report is developed weekly and presented to the ROC.
- Exception Report: Middle Office report summarizing current exception and violation reports. The Exception Report is developed quarterly presented to the ROC.
- Master Agreements: Front Office report summarizing the current set of approved master agreements by approved counterparty. The Master Agreements report is developed quarterly presented to the ROC.
- Policies Update: Middle Office report providing annual review of risk management policies and procedures and recommendations for updates. The Policies Update report is presented to the ROC.
- Transaction Position Detail: Middle Office report showing detail of Portfolio Performance report. Individual deal details showing MWh under contract and total dollars sorted by counterparty in support of the Portfolio Performance report are included in this report. The Transaction Position Detail report is presented to the ROC.
- MTM: Middle Office report showing MTM for life of deals by counterparty. The MTM report is developed weekly presented to Front Office and Back Office staff quarterly
- Credit Limit Status by Counterparty: Middle Office report showing counterparty credit limits, credit used and credit remaining. Special flagging of counterparties nearing their credit limits should also be shown. The Credit Limit Status by Counterparty report is presented to Front Office and Back Office staff weekly.
- Trading Strategy: Front Office report detailing trading strategies for various periods (e.g., daily, monthly, quarterly, future years). The Trading Strategy report is presented to the ROC quarterly.
- Scenario Planning: Front Office report detailing potential scenarios, expected result and probabilities. The Scenario Planning report is presented to the ROC quarterly.
- Pending Agreements: Front Office report detailing status of negotiations with potential counterparties on enabling agreements. The Pending Agreements report is developed weekly and presented to the ROC quarterly
- Energy Transaction Summary: Front Office report summarizing, by counterparty, Energy related transactions, both completed and contracted, involving Energy delivery. The Energy Transaction Summary report is developed weekly and presented to the ROC quarterly
- Non-Energy Transaction Summary: Front Office report summarizing, by counterparty, non-CAISO market Energy related transactions (puts, calls, options, RECs, GHG Compliance

Instruments and etc.) which do not involve (or are not specifically reliant on) Energy delivery. The Non-Energy Transaction Summary report is developed monthly presented to the ROC quarterly

- Market Forecast: Front Office report detailing forecast of market for periods (e.g. monthly, quarterly, future years). The Market Forecast report is presented to the ROC.
- Performance to Budget: Back Office report comparing incurred Energy costs to budgeted costs and existing contracts and uncovered exposure at market prices to remainder of budget. The Performance to Budget report is developed for EBCE staff weekly and presented to the ROC quarterly
- Procedures Exceptions: Back Office report noting any procedure exceptions. The Procedures Exceptions report is presented to the ROC quarterly

APPENDIX 8

RISK ASSESSMENT METHODOLOGIES

1. Risk Assessment Methodologies

1.1. CRR Valuation and Risk Assessment

CRR valuation is based upon historical data. EBCE values its CRR holdings individually and as a portfolio. Along with the average valuation, EBCE calculates the fifth (5th) percentile and 95th percentile position of each CRR Source/Sink combination.

EBCE performs a stress test on its CRR nominations. The stress test identifies the minimum, maximum and expected revenue for each available seasonal/monthly historical period.

The highest risk to EBCE's CRR allocation and auction portfolios is a collateral call. The CAISO does not net the portfolios, so the risk is a result of the separate collateral requirements for each portfolio. The expected value of EBCE's allocated CRR portfolio is positive. EBCE's auction portfolio consists only of unwound allocated CRR; as such, the expected value is negative. A collateral call could occur if an event increased the expected negative value of the auction portfolio even though the actual day-ahead market position would be offset by an increase in the expected value of the allocation portfolio.

EBCE mitigates this risk by leaving all its auction revenue in the CRR collateral account at the CAISO. EBCE's initial deposits of \$500,000 for the annual auction, and \$100,000 for the monthly also remain in the collateral account.

EBCE will only request a return of its auction revenue after the end of each monthly/ seasonal period, thereby maintaining usable secured available credit well in excess of its required collateral.

1.2. Mark-to-Market Methodology

The MTM calculation is a method to value future or forward open trading or hedge positions on an on-going basis to track market price changes. Once a position is taken in the market for some future delivery period, the value of that position must be monitored and managed on a routine basis. The volatility and volume of activity for a particular traded product will dictate how often it is necessary to update the MTM valuation of such product. EBCE will "mark" all open positions on no less than a MONTHLY basis, or as necessary, given market dynamics.

Long Term Transactions for future delivery or receipt of Energy. Several trading hubs host the majority of physically traded contracts such as Palo Verde (PV), California Oregon Border (COB), Mid-Columbia (Mid-C), California South (SP15), and California North (NP15). There are also several emerging hubs in the desert southwest and rocky-mountain areas. Publications such as *Megawatt Daily* and *Energy Market Report* list the daily prices traded at more heavily traded hubs. Information sources such as McGraw Hill publishing report broker trades for forward contracts at the most active trading

points. For illiquid products or trading points, the MTM may be applied less frequently than daily. In these circumstances a weekly or monthly mark may be appropriate. However, periodic market inquiries, as appropriate, should be made to capture any market movement.

The following information sources, or their equivalents as approved by the Middle Office and Front Office, are to be used to mark open positions for the traded products and hubs listed below:

- **WSPP Contracts for Liquid Products and Trading Hubs:** The standard forward traded electricity products as reported in the *Energy Market Report*, published by *Insight Research, Inc.*, or other relevant broker/trade reporting system. This source may be replaced at such time that EBCE has available an information service such as the Intercontinental Exchange (“ICE”), *Reuters North America Power* or other reliable source.
- **WSPP Illiquid Products and Trading Points:** these products are likely to change value less often than the more standard products. Periodic (weekly or bimonthly) probing of the market may be necessary to obtain current valuation. It may be possible to identify basis relationships between the liquid and illiquid trading points resulting in an approximate valuation.

1.3. Cost Value at Risk Calculation Methodology

In its most literal sense, Value at Risk (VaR) refers to a particular *amount of money*, the maximum amount likely to be spent or lost over some period, at some specific confidence level. EBCE has defined its supply management activity as a cost hedging activity. Therefore, for purposes of power resources management, Cost VaR is defined as a single, summary statistical measure of possible costs that are in excess of, expected costs.¹⁰

Traditional VaR methodology (as practiced in the financial sector) has two important characteristics. The first is that it provides a common consistent measure of risk across different positions and risk factors. The other characteristic of VaR is that it takes account of the correlations between different risk factors. If two risks offset each other, the VaR allows for this offset and tells us that the overall risk is fairly low. If the same two risks don’t offset each other, the VaR takes this into account as well and gives us a higher risk estimate.

Since Cost VaR tells us about EBCE’s maximum cost exposure, management can use it to determine internal capital allocation. Cost VaR can be used to determine capital requirements at the senior management level of the organization, and also down the line to the level of the individual transaction decision. The higher the risk associated with the transaction, the higher the VaR and the greater the capital requirement. Cost VaR can also be used to assess the risks associated with different transaction opportunities and the implications of various risk tolerance thresholds. Cost VaR can also be used to

¹⁰ Specifically, standard, or traditional, VaR is a measure of cash flow exposure due to “normal” market movements; traditional VaR would be used when monitoring hedge positions initiated with financial derivatives. Costs or losses greater than VaR estimates are suffered only with a specified small probability (e.g., 5% of the time, etc.). However, VaR is not a stress test – it will not indicate what a maximum loss may be 5% of the time.

evaluate the performance of divisions.

1. Methodology

The two (2) principal components of the traditional VaR calculation are the:

- Market
- Portfolio

The “Market” involves understanding and estimating how the particular market parameters behave over a specified holding period. This is captured by performing market parameter modeling. The “Portfolio” involves understanding and quantifying how the portfolio’s value varies according to estimated changes in market parameters. This is captured by revaluation. The standards applied to market parameter modeling and revaluations are described below. These two components are illustrated as follows:

Market > **Market Parameter Modeling** >

- Distribution assumptions
- Correlation assumptions
- Parameter assumptions

VaR Calculation

Portfolio > **Revaluation** >

- Historical Simulation
- Monte Carlo Simulation
- Full revaluation
- Analytic (Covariance/Variance Method)
- Sensitivities
or any reasonable
- Sensitivity Analysis
combination of these

2. Market Parameter Modeling

During market parameter modeling, various assumptions are made in relation to the distributions and correlations between assets, or products in the case of electricity, within the same risk category, or hub jurisdiction (i.e., SP15 vs. COB, etc.). In addition, various estimations are made with respect to the level of commodity prices and their implied volatilities.

Market parameters should be modeled on the basis of the following:

- Distribution assumptions for the market parameters are normal (this is a primary assumption for Cost VaR);

- Parameters are usually estimated on the following:
 - a one (1) month holding period, which is consistent with the frequency of revaluation of all financial trading positions.
 - the historic time period of one (1) calendar year or 252 days, unweighted, should be used to calculate historic volatilities and correlations.

Although distribution assumptions are assumed normal, management recognizes that actual power price distributions have displayed a skewed distribution. Traditional VaR methodology is not currently appropriate for the electric power industry. However, it may be appropriate for measuring positions in natural gas, whether physical or financial. Cost VaR, in the context of electricity portfolios, is not concerned with duration or term parameters (such as holding periods, etc.) since electricity products currently have predefined terms (e.g., hourly product, month product, quarterly product, etc.)

For modeling purposes, the Cost VaR is taken from the 95.0% quartile of the distribution of changes in the hourly chronological simulation of loads and resources (1.645 standard deviations).

3. Portfolio Revaluation

Revaluation is the calculation of the changes in portfolio costs resulting from a change in specific model assumptions (i.e., price, risk tolerance, volatility, etc.).

Two revaluation techniques are permitted:

- Full revaluation: Full revaluation occurs where the transactions in the portfolio, or positions, are all individually marked to market value for each market rate scenario generated. This is also true for Cost VaR applications.
- Delta approximation: Delta refers to the change in one variable given a change in another variable. A sensitivity analysis is an *approximation* of the change in net present value for various sensitivities of the portfolio. Sensitivity analysis may be used only for linear approximation. For linear approximation the sensitivity of the rate of change of the price of the transaction to a small change in the market rate is calculated. This is more applicable to traditional VaR where linear relationships and correlations may exist between financial instruments. On a more simplified level, Cost VaR considers delta approximation when adjustments are made to parameters such as risk tolerance, price, and volatility.

For purposes of traditional VaR, the range should cover at least 1.645 standard deviations in either full revaluation or delta approximation. Any reasonable combination of the above is also permitted. For example, a combination of the above might be used for large portfolios which contain both complex and simple instruments and for which different revaluation techniques are appropriate.

The risk measurement methodology must take the current mark-to-market value supplied and apply revaluation techniques to calculate the potential loss or VaR, which may arise from the future changes in market.

Note: Sensitivity analysis is appropriate for individually measuring risks which may not otherwise be measured on a full portfolio basis such as location or spread risks. Sensitivity analysis is not appropriate

for products with non-linear price behavior. In particular, option portfolios contain a high degree of non-linearity. This means that the change in the portfolio value has a non-linear relationship with changes in the underlying asset price. In this case, a sensitivity analysis is no longer valid.

4. VaR Calculation

Monte Carlo simulation is the preferred approach to VaR calculation for all portfolios. This is also true for Cost VaR when simulating loads and resources. However, the Analytic Method (Variance/Covariance) will be used if EBCE does not have the computing power necessary to generate a Monte Carlo simulation. EBCE recognizes that the Analytic Method is inappropriate for portfolios with non-linear characteristics (i.e., optionality) and will make the necessary adjustments when portfolio non-linearity becomes significant.

Monte Carlo Simulation Method:

Monte Carlo simulation estimates Cost VaR from a simulated distribution that is derived by assuming particular theoretical market processes and simulating large numbers of random paths that prices, or other parameters, could follow. The method proposes that if we take a sufficiently large number of simulations, they will produce a simulated distribution that will converge to the unknown true distribution of portfolio values. VaR and Cost VaR can be inferred from the simulated distribution. The steps required in a Monte Carlo simulation are as follows:

- Perform market parameter modeling by estimating the parameters of the distribution (e.g., volatilities and correlations) using a historical time series of market parameters;
- Generate an appropriate distribution of random variables;
- Perform the simulation by applying the covariance to the random numbers to generate a set of correlated market parameter scenarios; and
- Apply market parameter scenarios to the portfolio and, using revaluation method set, generate a distribution of portfolio values.

Analytic Method (Variance/Covariance):

The Analytic Method is based on the same distribution assumptions for market parameter modeling as the Monte Carlo method but restricts the portfolio to linear risk components only. This allows the analyst to assume that the portfolio changes are normally distributed.

The steps required in the analytic VaR calculation are:

- Perform market parameter modeling by estimating the parameters of the distribution (e.g., volatilities and correlations) using a historical time series of market parameters;
- Calculate the vector of sensitivities with respect to the underlying spot rates;
- A first order approximation is used to calculate changes in portfolio value. Given the normality assumption, the distribution parameters can then be calculated analytically using the sensitivities determined in step 2 above.

The VaR is defined as 1.645 the standard deviation of the change in portfolio value which equals –

under the assumption of zero mean – a confidence level of 95%.

1.4. Cost VaR Stress Testing Methodologies and Procedures

In broad terms, there are two (2) main approaches to Cost VaR stress testing. The first of these focuses on the impact of particular specified scenarios – typically a fairly limited number of such scenarios – that are fed into an analytical process. This approach to stress testing is usually known as scenario analysis. The term “stress testing” is used here to apply to any procedures that attempt to evaluate the impact of hypothetical future events on EBCE’s hedging and/or transacting portfolios.

The term “scenario analysis” is used to apply to that type of stress testing that focuses on particular specified *scenarios*, as distinct from the second type of stress testing that specifies classes of mathematical or *statistical possibilities* and then works through these possibilities in a mechanical way. Note that scenario analysis only indicates what EBCE stands to “spend” in a particular circumstance, and does not indicate (and is not designed to indicate) how likely any particular circumstance is to occur. Scenario analysis is therefore a natural complement to Cost VaR approaches that indicate something about the probability of a clearly defined event, but do not as such identify what EBCE would spend if the event actually occurred.

The Cost VaR stress testing methods approved for use by the ROC include 1) worst-case scenario analysis, and 2) extreme value analysis.

Worst-Case Scenario Analysis (WCSA):

WCSA allows an examination of the worst case that is *expected to occur* (Boudoukh, Richardson and Whitelaw, 1995). This approach is useful when there is concern about maximum possible costs over a particular horizon period (e.g., one month, one year, etc.) and an expectation of some savings or cost over each sub-period (e.g., each day or month). The worst-case scenario is the cost associated with the most adverse daily outcome. If each outcome is a random variable Z_i , and there are n sub-periods in our horizon, then the worst-case scenario is:

- $\text{Min}[Z_1, Z_2, \dots, Z_n]$

The actual worst-case scenario can now be estimated by running simulations of the random Z variables.

Extreme Value Analysis (EVA):

This approach starts from the premise that the extreme values of the cost distribution are what we are mostly concerned about, and then uses the statistical theory of extreme values to determine maximum extreme costs with a determined degree of confidence.

In practice the distribution of extreme values is not known, but the key insight of EVA theory is that this distribution converges in large samples to a limiting distribution of a particular known form. An analytic solution for the Cost VaR can then be found from this distribution once a desired confidence level is specified. The important parameter is the tail index, which gives the thickness of the tails (e.g., for a t -distribution, this is the number of degrees of freedom).

The Extreme Value Analysis approach has various attractions: (1) It deals directly with the extreme values typical of the electric Energy market. (2) It provides a firm methodological basis for the estimation of Cost VaR. (3) It does not impose any particular form on the underlying price distribution, but instead allows this distribution to take any well-behaved form, including an asymmetric (i.e., skewed) one. (4) It produces a simple analytical formula for Cost VaR. (5) The approach is robust, flexible and easy to use.

Note: Standard VaR methodology will be used to evaluate exposures resulting from activity in financial instruments. Currently, the electric power industry has not developed a highly liquid market in financial instruments. However, the natural gas market is relatively mature and offers opportunities in the use of financial instruments for the purpose of cost hedging. Standard VaR methods can be utilized more appropriately with natural gas as market performance generally follows a normal distribution.

Backtesting:

The purpose of a backtest is to compare the expected cost (at the then forward price) with actual cost (at the spot price), and implied volatility with actual volatilities, to determine if EBCE's cost VaR is adequate (conservative enough) to capture the potential market exposure.

To serve such purpose, staff may use the same open position number forecast 12 months ago and apply the DA spot market price in the past 12 months. This number would be the "actual cost" of the open position had it stayed unchanged and filled in the DA market. Comparing the difference between the two numbers will provide guidance as to whether the variance falls within the 95% cost VaR boundary and identify whether EBCE would have been better off leaving the position open or covering it 12 months ago.

EBCE has performed backtesting of the Cost VaR measures during the in-house model development and validation phase. The backtesting results revealed adequacies in the Cost VaR measures (given the statistical confidence intervals used or various parameters).

APPENDIX 9

Recommended Coverage

The following Time-Price Coverage Matrix will be used as a guide for EBCE's short term and long term procurement strategies. The objective of the Time-Price Coverage Matrix is to develop a procurement strategy focused on hedging against the risk of open load positions, as measured over time, and to mitigate EBCE's exposure to market price volatility and other pricing risk. EBCE will strive to further develop this matrix based on (1) EBCE's wholesale price risk and (2) appropriate limits for these risks. The actual covered positions taken by EBCE, reflected as a percentage of forecasted load, may deviate from the following Time-Price Coverage Matrix based upon EBCE's staff evaluation of current market conditions and other applicable requirements (e.g., regulatory requirements).

Months to Delivery		Price Matrix Percentile						
		>60%	60%	50%	40%	25%	10%	<10%
		Covered Position as a % of Forecasted Load						
0+	3	80%	80%	85%	85%	90%	90%	100%
3+	6	70%	70%	75%	80%	80%	90%	100%
6+	9	70%	70%	75%	80%	80%	80%	90%
9+	12	60%	60%	70%	80%	80%	80%	90%
12+		60%	60%	70%	80%	80%	80%	90%

Cost-at-Risk Metrics

RESERVED / TO BE DEVELOPED



COMMUNITY CHOICE
P A R T N E R S
SECURING YOUR COMMUNITY'S ENERGY FUTURE

Clean Power Alliance of Southern California ERMP





Energy Risk Management Policy

July 12, 2018

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Section 1: ENERGY RISK MANAGEMENT POLICY OVERVIEW

1.1 Background and Purpose

The Clean Power Alliance of Southern California (CPA) is a Joint Powers Authority (JPA) administering a Community Choice Aggregation (CCA) program in Southern California. CPA service territory currently includes 31 jurisdictions – 29 cities and the unincorporated parts of Los Angeles and Ventura Counties. CPA members presently include the following:

Counties:

Los Angeles

Ventura

Cities:

Agoura Hills	Hawaiian Gardens	Santa Monica
Alhambra	Hawthorne	Sierra Madre
Arcadia	Manhattan Beach	Simi Valley
Beverly Hills	Malibu	South Pasadena
Calabasas	Moorpark	Temple City
Camarillo	Ojai	Thousand Oaks
Carson	Oxnard	Ventura
Claremont	Paramount	West Hollywood
Culver City	Redondo Beach	Whittier
Downey	Rolling Hills Estates	

CCA, authorized in California under AB 117 and SB 790, allows local governments, including counties and cities, to purchase wholesale power supplies for resale to their residents and businesses as an alternative to electricity provided by an Investor Owned Utility (IOU). For CPA members, that IOU is Southern California Edison (SCE). Electricity procured by CPA to serve customers is delivered over SCE's transmission and distribution system.

CPA exists to serve its local government members, and the residences and businesses located within their respective communities. CPA's specific objectives are to provide its customers with a reliable supply of electricity, at competitive electric rates, sourced from a generation portfolio with lower greenhouse gas (GHG) emissions and higher renewable content than the incumbent utility, SCE. CPA also has goals to be a catalyst for local economic development and give its member agencies greater choice in the energy procured for their residents.

To meet these commitments, CPA must procure electric power supplies and operate in the wholesale energy market which exposes CPA, and ultimately the customers that it serves, to various risks. The intent of the Energy Risk Management Policy (ERMP) is to provide CPA, and by extension its customers, with a

framework, to identify, monitor and manage risks associated with procuring power supplies and operating in wholesale energy markets.

The Energy Risk Management Policy (ERMP), including its appendices, establishes CPA's Energy Risk Program.

1.2 Scope

Unless otherwise explicitly stated in the ERMP or other policies approved by the CPA Board of Directors (Board), the ERMP applies to all power procurement and related business activities that may impact the risk profile of CPA. The ERMP documents the framework by which CPA staff and consultants will:

- Identify and quantify risk
- Develop and execute procurement strategies
- Develop controls and oversight
- Monitor, measure and report on the effectiveness of the ERMP

To ensure its successful operation, CPA has partnered with experienced consultants to provide power supply services. Specific to power procurement, CPA has partnered with an outside Portfolio Manager. The Portfolio Manager augments CPA's internal Front (transacting), Middle (monitoring) and Back (settlement) Office related activities as discussed at Section 4.4. The Portfolio Manager will adhere to and be governed by the ERMP in providing these services to CPA. In addition, the Portfolio Manager's activities executed on CPA's behalf will be governed by its own risk management policies and procedures, and prudent industry practices.

1.3 Energy Risk Management Objective

The objective of the ERMP is to provide a framework for conducting procurement activities that maximize the probability of CPA meeting the goals listed in Section 2.1.

Pursuant to the ERMP, CPA will identify and measure the magnitude of the risks to which it is exposed and that contribute to the potential for not meeting identified goals.

1.4 ERMP Administration

The ERMP has been reviewed and approved by the Board. The Executive Director in consultation with the Risk Management Team (collectively, the "RMT"), as defined in Section 4.3, and the Board must approve amendments to the ERMP, except for appendices D, E, and F, which may be amended with approval of the Executive Director, in consultation with the RMT. The Executive Director must give notice to the Board of any amendment it makes to an appendix or a reference policy or procedure document.

Section 2: GOALS AND RISK EXPOSURES

2.1 ERMP Goals

To help ensure its long-term success, CPA has outlined the following goals:

- Build a portfolio of resources with lower GHG emissions and higher renewable content than SCE;
- Meet reliability requirements established by the State of California, and operate in a manner consistent with Prudent Utility Practice (defined as the practices generally accepted in the utility industry to ensure safe, reliable, compliant and expeditious operations);
- Maintain competitive retail rates with SCE after adjusting for exit fees (currently the Power Charge Indifference Adjustment or PCIA) and Franchise Fees paid by CPA customers;
- Emphasize during the initial years of operation the funding of financial reserves to meet the following long-term business objectives:
 - Stabilize rates by dampening year-to-year variability in power supply costs;
 - Establish an investment-grade credit rating to maximize the ability of CPA to engage in long-term acquisition or development of generation supplies consistent with ERMP goals; and
 - Provide a source of equity capital for investment in generation.

The goals outlined above are incorporated into the financial models and metrics that are used to monitor and measure risk and ERMP success. It is important to note that the goals listed above are not intended to be a comprehensive list of goals for CPA. Rather, the above reflect the overarching goals critical to CPA's long-term financial success and that will guide the ERMP.

2.2 Risk Exposures

For the purpose of the ERMP, risk exposure is assessed on all transactions (energy, environmental attributes, and capacity) executed by the Portfolio Manager on behalf of CPA, or by CPA unilaterally, as well as the risk exposure of open positions and the impacts of these uncertainties on CPA's load obligations.

CPA faces a range of risks during launch and ongoing operation including:

- Customer opt-out risk
- Market risk
- Regulatory risk
- Volumetric risk
- Model risk
- Operational risk
- Counterparty credit risk
- Reputation risk

2.2.1 Customer Opt-Out Risk

Customer opt-out risk may be realized by any condition or event that creates uncertainty within, or a diminution of, CPA's customer base. Customer opt-out risk is manifested in two separate ways.

First, the ability of customers to return to bundled service from SCE creates uncertainty in CPA's revenue stream, which is critical for funding ERMP goals and achieving the investment grade credit rating needed to successfully operate over the long-term.

Second, customer opt-out risk can potentially challenge the ability of CPA to prudently plan for, and cost-effectively implement, long-term resource commitments made on behalf of its member communities and the customers it serves.

CPA will manage customer opt-out risk through the following means:

- Implement a key accounts program and maintain strong relationships with the local community including elected leaders, stakeholders and all of the customers CPA serves;
- Actively monitor and advocate for the interests of CPA and its customers in SCE ratemaking proceedings, California Public Utilities Commission (CPUC) proceedings that potentially affect exit fees paid by CPA customers, as well as all regulatory and legislative proceedings where an adverse outcome may challenge the ability of CPA to deliver on customer commitments;
- Regularly monitor and report actual and projected financial results including probability-based and stress-tested financial results assuming a range of possible future outcomes with respect to:
 - Future SCE generation and PCIA rates;
 - Future market costs for energy, environmental attributes and capacity; and
 - Anticipated or threatened regulatory actions, when appropriate.
- Adopt, implement and update, as needed, a formal Energy Risk Hedging Strategy (Appendix B) describing the strategy that CPA will follow for engaging in procurement activities; and
- Evaluate expansion of CPA's customers base through incorporation of other eligible communities into the CCA.

2.2.2 Market Risk

Market risk is the uncertainty of CPA's financial performance due to variable commodity market prices (market price risk) and uncertain price relationships (basis risk). Variability in market prices creates uncertainty in CPA's procurement costs, which has a direct impact on customer rates. CPA will manage market risk through:

- Regular measurement;
- Execution of approved procurement;
- Hedging and Congestion Revenue Right strategies; and
- Use of the Limit Structure set forth in the ERMP (see limits in Section 5.1.2 and Appendix B).

2.2.3 Regulatory and Legislative Risk

CPA and other CCAs are subject to an evolving legal and regulatory landscape. Additionally, CCAs are in direct competition with California's IOUs in supplying retail electricity and the IOUs face the risk of stranded investments in generating assets and power purchase agreements procured in the past to serve now departing CCA loads. The manner in which such stranded costs of these legacy power supplies are allocated to departing CCA loads is subject to change based on various proceedings at the CPUC. The outcome of such proceedings will directly affect the cost of power for CPA's customers, as well as impact the rate competitiveness of CPA.

In addition to exit fees, potential regulatory and/or legislative changes could affect the ability of CPA to exercise local control over the manner and means of procuring power supplies to serve its customers.

CPA will manage regulatory and legislative risks by:

- Regularly monitor and analyze legislative and regulatory proceedings impacting CCAs; and
- Actively participate in, and advocate for, the interests of CPA and its customers during regulatory and legislative proceedings.

2.2.4 Volumetric Risk

Volumetric risk reflects the potential uncertainty in the quantity of different power supply products (e.g., renewable energy, Carbon Free Energy and capacity) required to meet the needs of CPA customers. This uncertainty can lead to adverse financial outcomes, as well as create potential for CPA to fail to meet reliability or renewable energy compliance requirements established by the State of California and/or the CPA Board. Customer load is subject to fluctuation due to customer opt-outs or departures, temperature deviation from normal, unforeseen changes in the growth of behind the meter generation by CPA customers, unanticipated energy efficiency gains, new or improved technologies, as well as local, state and national economic conditions. CPA will manage volumetric risk by taking steps to:

- Implement robust short- and long-term load and generation supply forecast methodologies, including regular monitoring of forecast accuracy through time and refining such forecasts as additional information becomes available;
- Account for volumetric uncertainty in load and/or generation supply in the Energy Risk Hedging Strategy;
- Monitor trends in customer onsite generation, economic shifts, and other factors that affect electricity customer consumption and composition; and
- Proactively engage with customers in developing distributed energy resources and behind-the-meter generation and energy efficiency programs so as to better forecast changes in load.

2.2.5 Model Risk

Model risk has potential for an inaccurate or incomplete representation of CPA's actual or forecast financial performance due to deficiencies in models and/or information systems used to capture all transactions. CPA will manage model risk by:

- RMT ratification of models used to forecast financial performance, net positions and/or measure risk;
- Ongoing review of model outputs;
- A requirement to record all procurement transactions in a single trade capture system; and
- Ongoing update and improvement of models as additional information and expertise is acquired.

2.2.6 Operational Risk

Operational risk is the uncertainty of CPA's financial performance due to weaknesses in the quality, scope, content, or execution of human resources, technical resources, and/or operating procedures within CPA. Operational risk can also be exacerbated by fraudulent actions by employees or third parties or inadequate or ineffective controls. CPA will manage operational risk through:

- The controls set forth in the ERMP;
- RMT oversight of procurement activity;
- Timely and effective reporting to the Executive Director in consultation with the RMT, and the Board;
- Implementation of a compliance training program for CPA staff;
- Ongoing CPA and Portfolio Manager staff education/training and participation in industry forums; and
- Annual audits to test compliance with the ERMP.

2.2.7 Counterparty Credit Risk

Counterparty credit risk is the potential that a counterparty will fail to perform or meet its obligations in accordance with terms agreed to under contract. CPA's exposure to counterparty credit risk is controlled by the limit controls set forth in the Credit Policy described in Section 6.

2.2.8 Reputation Risk

Reputation risk is the potential that CPA's reputation is harmed, causing customers to opt-out of CPA service and migrate back to SCE. Reputational risk is also the potential that energy market participants view CPA as an untrustworthy business partner, thus reducing the pool of potential counterparties and/or having counterparties apply a CPA-specific risk premium to pricing. Reputational risk is managed through:

- Implementation of and adherence to the ERMP;
- Engaging in ethical, transparent and honest business practices during trading activities; and
- Establishment and adherence to industry best practices including both those adopted by other CCAs, as well as those adopted by traditional municipal electric utilities.

Section 3: BUSINESS PRACTICES

3.1 General Conduct

It is the policy of CPA that all Board members, staff, and consultants (collectively referred to “CPA Representatives”), adhere to standards of integrity, ethics, conflicts of interest, compliance with statutory law and regulations and other applicable CPA standards of personal conduct while employed by or affiliated with CPA. Towards this end, all persons performing marketing and trading functions on behalf of CPA shall be subject to, read, understand, and abide by the provisions contained in the CPA Code of Marketing and Trading Practices (see Appendix F).

3.2 Trading for Personal Accounts

All CPA Representatives participating in any transaction or activity within the coverage of the ERMP are required to comply with the CPA Conflict of Interest Code adopted by the Fair Political Practices Commission and are obligated to give notice in writing to CPA of any legal, financial or personal interest such person has in any counterparty that seeks to do business with CPA, and to identify any real or potential conflict of interest such person has or may have with regard to any existing or potential contract or transaction with CPA, within 48-hours of becoming aware of the conflict of interest. Written notice should be submitted to the Executive Director substantially in the form of the letter notification shown in Appendix E.

Further, all persons are prohibited from personally participating in any transaction or similar activity that is within the coverage of the ERMP, or prohibited by California Government Code Section 1090, and that is directly or indirectly related to the trading of electricity and/or environmental attributes as a commodity.

If there is any doubt as to whether a prohibited condition exists, then it is the CPA Representative’s responsibility to discuss the possible prohibited condition with CPA legal counsel.

3.3 Adherence to Statutory Requirements

All CPA Representatives are required to comply with rules promulgated by the State of California, CPUC, California Energy Commission, Federal Energy Regulatory Commission (FERC), Commodity Futures Trading Commission (CFTC), and other regulatory agencies.

Congress, FERC and CFTC have enacted laws and regulations that prohibit, among other things, any action or course of conduct that actually or potentially operates as a fraud or deceit upon any person in connection with the purchase or sale of electric energy or transmission services. These laws also prohibit any person or entity from making any untrue statement of fact or omitting a material fact where the omission would make a statement misleading. Violation of these laws can lead to both civil and criminal actions against the individual involved, as well as CPA. The ERMP is intended to comply with these laws, regulations and rules and to avoid improper conduct on the part of anyone employed by CPA. These procedures may be modified from time to time based on legal requirements, auditor recommendations, and other considerations.

In the event of an investigation or inquiry by a regulatory agency, CPA will provide legal counsel to employees provided the subject of the investigation is within the employee's course and scope of employment. However, CPA reserves the right to refrain from providing legal counsel if it reasonably appears to the CPA General Counsel and Executive Director that the employee was either not acting in good faith or was acting outside the course and scope of his or her employment.

CPA employees are prohibited from working for another power supplier, CCA or utility while they are simultaneously employed by CPA unless an exception is authorized by the Board.

3.4 Transaction Type

Authorized transaction types are listed in Appendix C. Each approved transaction type that is listed is included to either meet a mandatory procurement obligation required of all Load Serving Entities (LSE) serving retail loads in California; and/or alternatively, the approved product is needed for CPA to meet an identified ERMP goal. Specifically:

- Resource Adequacy Capacity is a mandatory procurement obligation that ensures adequate generation supplies are available on a planning basis to reliably meet the requirements of electric consumers in the California Independent System Operator (CAISO) balance authority;
- Portfolio Content Category 1 (PCC1) and Portfolio Content Category 2 (PCC2) renewable energy must be procured by CPA to comply with the state of California's Renewable Portfolio Standard, as required by SB 350. CPA has made a voluntary decision to purchase incremental quantities of PCC1 and/or PCC2 renewable energy to exceed the renewable portfolio content of the incumbent utility;
- Carbon Free Energy is a voluntary purchase of specified source energy from large hydroelectric generation that enables CPA to provide its customers with electricity sourced from generators producing low GHG emissions so that member agencies can meet their climate action plans and CPA can contribute to combatting climate change;
- Physical Energy products are a voluntary purchase made by CPA to provide cost certainty and rate stability for customers; and
- The CAISO is the largest grid operator in the state of California and CPA members lie within its balancing area. CAISO operates Day-Ahead, Fifteen Minute and Real-Time Markets and other ancillary markets necessary for reliable operation of the grid. CPA is required to participate in CAISO markets. Acquisition of the CAISO products listed in Appendix C either result from mandatory participation in CAISO's markets, or are useful for managing short-term market risks associated with CAISO's markets.

The strategy for using and procuring the approved products is described in further detail in the Energy Risk Hedging Strategy.

3.4.1 Exceptions

New transaction types may provide CPA with additional flexibility and opportunity but may also introduce new risks. Therefore, transaction types not included in Appendix C must be approved by the RMT and the Board prior to execution using the process defined below.

When seeking approval for a new transaction type, a New Transaction Type Approval Form, as shown in Appendix D, is to be drafted describing all significant elements of the proposed transaction. The proposal write-up will, at a minimum, include:

- A description of the benefit to CPA, including the purpose, function and expected impact on costs (i.e.; decrease costs, manage volatility, control variances, etc.);
- Identification of the in-house and/or external expertise that will manage and support the new or non-standard transaction type;
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues;
- How the exposures to the risks above will be managed by the Limit Structure;
- Proposed valuation methodology (including pricing model, where appropriate);
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new transaction type;
- Proposed accounting methodology; and
- Proposed work flows/methodology (including systems).

It is the responsibility of the Middle Office to ensure that relevant departments have reviewed the proposed transaction type and that material issues are resolved prior to submittal to the Board for approval. If the transaction type is approved, Appendix C to the ERMP will be updated to reflect its addition.

3.5 Counterparty Suitability

All counterparties with whom CPA transacts must be reviewed for creditworthiness and assigned a Credit Limit as described in Section 6.

3.6 System of Record

Since information systems play a vital role in CPA's trading abilities, CPA shall ensure that the information systems and technology used to store all transaction information are maintained and secure. At the outset of CCA operations, CPA's transactions will be stored in the Portfolio Manager's enterprise trading and risk management system.

The Portfolio Manager has assigned a Database Administrator (DBA) that is charged with database security and maintenance for the transaction database. For data security, transaction data stored in the system of record will be replicated daily to ensure data redundancy and backed-up to an offsite location.

All transaction records will be maintained in US dollars and will be separately recorded and categorized by type of transaction. This system of record shall be auditable.

3.7 Transaction Valuation

Transaction valuation and mark-to-market (valuing of an asset based on its current market price) reporting of positions shall be based on independent, publicly available, market-observed prices (replacement costs) whenever possible. In the event there are not market-observed prices, the value of CPA's

transactions shall follow a notional value calculation (the total nominal dollar value of a transaction over its full duration) or other methodology approved as part of the new product approval process.

All transactions and open positions will be valued daily.

3.8 Stress Testing

In addition to limiting and measuring risk using the methods described herein, stress testing shall also be used to examine performance of the CPA portfolio under potential adverse conditions. Stress testing is used to understand the potential variability in CPA's projected procurement costs and resulting impacts on customer rates and CPA's competitive positioning associated with low probability events. The Middle Office will perform stress-testing of the portfolio on a monthly basis and distribute results to the RMT.

3.9 Trading Practices

As previously noted, CPA exists to serve its customers. The scope of its wholesale market operations is limited to that which is required to meet the power supply obligations of its customers consistent with ERMP goals. It is the expressed intent of the ERMP to prohibit wholesale market activities that result in procurement of any power supply product beyond that which is required to meet an identifiable need of CPA customers. The purchase or sale of any power supply product beyond what is reasonably anticipated to be needed to meet the requirements of CPA customers is a speculative transaction and is prohibited.

In the course of developing operating plans and conducting procurement activities, CPA recognizes that staff must employ reasonable expertise and judgment, and it is not the intent of the ERMP to restrain the legitimate application of analysis and market expertise in executing procurement strategies intended to minimize costs or maximize the value of generation within the constraints of the ERMP. If any questions arise as to whether a proposed transaction(s) constitutes speculation, the RMT shall review the transaction(s) to determine whether the transaction(s) would constitute speculation and shall document its findings. As used here, "speculation" means the act of trading an asset with the expectation of realizing financial gain resulting from a change in price in the asset being transacted.

Staff and consultants engaged in procurement activities will also observe the following practices:

- Persons shall conduct business in good faith and in accordance with all applicable laws, regulations, tariffs and rules;
- Persons shall not arrange or execute wash trades (i.e. offsetting transactions where no financial risk is taken);
- Persons shall not disseminate known false or misleading information or engage in transactions to exploit such information;
- Persons shall not game or otherwise interfere with the operation of a well-functioning competitive market;
- Persons shall not collude with other market participants; and
- Persons shall immediately report any known or suspected violation of the ERMP.

3.10 Training

CPA recognizes the importance of ongoing education to manage risk and to contribute to ERMP success. Towards this end, CPA will observe the following practices:

- All employees executing procurement transactions on behalf of CPA must receive appropriate training in the attributes of each product type that they transact, how the product furthers the portfolio objectives of CPA, and how the risk profile of CPA is impacted by procurement of each product;
- All employees executing procurement activities shall complete energy market compliance training once per calendar year and acknowledge receipt of said training in writing;
- New employees must complete energy market compliance training within 30 days of hire date.

The Chief Operating Officer shall maintain records of each employee's training status.

Section 4: ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES

4.1 Board of Directors Responsibilities

The Board has the responsibility to review and approve the ERMP. With this approval, the Board acknowledges responsibility for understanding the risks CPA is exposed to through its CCA activity and how the policies outlined in the ERMP help CPA manage the associated risks. The Board is also responsible to:

- Provide strategic direction to CPA;
- Consider transactions beyond authorities delegated to the Executive Director in consultation with the RMT;
- Consider changes to the Energy Risk Hedging Strategy (see Appendix B); and
- Consider new transaction types not currently listed in the ERMP (see Appendix C).

4.2 Risk Management Team

The RMT is responsible for implementing, maintaining and overseeing compliance with the ERMP and for maintaining the Energy Risk Hedging Strategy. At a minimum, the members of the RMT shall include the Executive Director and at least two additional CPA staff members with experience in energy markets selected at the sole discretion of the Executive Director.

The primary goal of the RMT is to ensure that the procurement activities of CPA are executed within the guidelines of the ERMP and are consistent with Board directives. The RMT shall consider and propose changes to the ERMP when conditions dictate.

Pursuant to direction and delegation from the Board of Directors and the limitations specified by this ERMP, the Executive Director, in consultation with the RMT, maintains authority over procurement activities for CPA. This authority includes, but is not limited to, taking any or all actions necessary to ensure compliance with the ERMP.

The RMT authorities and responsibilities may include, but are not limited to:

- Maintain the Energy Risk Hedging Strategy and ensure that all procurement strategies and related protocols are consistent with the ERMP;
- Review initial financial and risk models and subsequent changes;
- Establish counterparty Credit Limits;
- Review initial counterparty credit review models and methods for setting and monitoring Credit Limits and subsequent changes;
- Review reports as described in the ERMP;
- Meet to review actual and projected financial results and potential risks;
- Keep apprised of any change in the environment in which CPA operates that has a material effect upon the risk profile of CPA;
- Review summaries of limit violations and recommend corrective actions, if necessary; and

- Review the effectiveness of CPA's energy risk measurement methods.

4.3 Segregation of Duties

CPA shall work to maintain a segregation of duties, also referred to as "separation of function," to help manage and control the risks outlined in the ERMP. Individuals responsible for legally binding CPA to a transaction will not also perform confirmation or settlement functions without supplemental, transparent, and auditable controls. CPA also will leverage the organizational structure of the Portfolio Manager's Front, Middle and Back offices to help maintain a segregation of duties. The Front, Middle and Back Office responsibilities for CPA are described below.

4.4.1 Front Office

The Front Office is headed by the Director of Power Planning & Procurement. The Front Office has overall responsibility for (1) managing all activities related to procuring and delivering resources needed to serve CPA load, (2) analyzing fundamentals affecting load and supply factors that determine CPA's net position, and (3) transacting within the limits of the ERMP and associated policies to balance loads and resources and maximize the value of CPA assets through the exercise of approved optimization strategies. Other duties associated with these responsibilities include:

- Assist in the development and analysis of risk management hedging products and strategies, and bring recommendations to the RMT;
- Prepare a monthly operating plan for the prompt month (the month following the current month) that gives direction to the Day-Ahead and Real-Time Market trading and scheduling staff regarding the bidding and scheduling of CPA's resource portfolio in the CAISO market;
- Develop, price and negotiate hedging products;
- Forecast Day-Ahead load and monitor/forecast same-day loads;
- Keep accurate records of all executed transactions;
- Manage and facilitate the transaction execution process for long-term power purchase agreements through coordination of the following activities:
 - Notify Front Office personnel of any anticipated unique physical delivery or scheduling issues;
 - Work with Middle Office personnel and legal counsel to establish a contract, evaluate counterparty creditworthiness and secure additional credit from the counterparty, if necessary;
 - Work with Middle Office, as needed, to perform an analysis of the potential transaction to evaluate the effect on CPA's portfolio risks;
 - Notify Back Office of terms and conditions affecting settlement to ensure that the necessary settlement procedures are in place.

4.4.2 Middle Office

The Middle Office functions will be the responsibility of the Chief Operating Officer. The Middle Office provides market and credit risk oversight, has responsibility for development of risk management policies and procedures, monitors compliance with the same, and keeps management and the Board informed on

risk management issues. Through its partnership with the Portfolio Manager, CPA will maintain its Middle Office functions independent from the front and back office functions.

Middle Office responsibilities include the following:

- Create and ensure compliance with policies outlining standard procedures for conducting business;
- Estimate and publish daily forward monthly power and natural gas price curves for a minimum of the balance of the current year through the next calendar year;
- Calculate and maintain the net forward positions (a forecast of the anticipated electric demands compared to existing resource commitments) of CPA for all power products (energy, renewable energy, Carbon Free Energy and Resource Adequacy Capacity);
- Ensure that CPA adheres to all risk policies and procedures;
- Implement and enforce credit policies and limits;
- Handle confirmation of all transactions and reconcile differences with the trading counterparties;
- Ensure all trades have been entered into the appropriate system of record;
- Ensure that all CAISO Day-Ahead, Fifteen Minute and Real-Time Market delivery volumes and prices are entered into a transaction database;
- Review models and methodologies and recommend RMT approval, as needed;
- Maintain a record of all transactions in a single trade capture system; and
- Mark unrealized and realized gain and losses associated with CPA hedge activity.

4.4.3 Back Office

The Back Office functions will be the responsibility of the Director of Power Planning & Procurement or other senior financial staff as CPA grows. It provides support with a wide range of administrative activities necessary to execute and settle transactions and to support the risk control efforts (e.g. transaction entry and/or checking, data collection, billing, etc.) consistent with the ERMP. Through its partnership with the Portfolio Manager, CPA will maintain its Back Office functions independent from the Front and Middle Office functions.

Back Office responsibilities include the following:

- Ensure reliability of financial statements;
- Establish tax policies that comply with tax rules and make appropriate tax elections, in collaboration with accounting professionals and/or outside auditing firms;
- Maintaining the overall financial security of transactions undertaken on behalf of CPA;
- Carrying out month-end checkout of all transactions each month; and
- Invoicing and resolving disputes with counterparties.

Section 5: DELEGATION OF AUTHORITY

5.1 Risk Limits

The following limits apply to all CPA procurement activities. These limits are Board-approved and define the limits that CPA must operate within. The metrics and management of risk within these limits is further described in the Energy Risk Hedging Strategy.

5.1.2 Delegation Authority

Through its approval of the ERMP, the Board has delegated operations and oversight to the Executive Director, in consultation with the RMT, as outlined through the ERMP. Specifically, to facilitate daily operations of the CCA, the Board has delegated transaction execution authorities shown in the table below.

<i>Position</i>	<i>Term Limit*</i>	<i>Counterparty Limit</i>	<i>Notional Value Limit (per transaction)</i>	<i>Notional Value Limit (annual)</i>
Executive Director in consultation with the RMT	5 years	Pursuant to Credit Policy	Board-approved limits set in the Energy Risk Hedging Strategy	
Executive Director ¹	1 year	Pursuant to Credit Policy	\$5m in 2019; \$10m in 2020 and beyond	\$25m in 2019; \$80m in 2020 and beyond ²

* Term is the total duration of the contract, defined as the number of days between the beginning flow date and the ending flow date, inclusive.

For a transaction to be valid, it must conform to each of the four limits specified in the above table.

These limits will be applied to wholesale power procurement outside of transactions directly executed with the CAISO. These limits provide CPA the needed authority to manage risks as they arise. Transactions falling outside the delegations above require Board approval prior to execution.

Transactions with CAISO and CAISO administrative fees are excluded from this table. CAISO transactions are limited to those required for scheduling contracts in the CAISO market and for balancing CPA's load and resources.

¹ For operational flexibility, the Executive Director will have the authority to delegate 30% of procurement authority to either the Chief Operating Officer or Director of Power Planning & Procurement, as needed.

² Annual limits intended to reflect approximately 10% of annual power supply costs.

Long-term procurement, defined as contract terms greater than 5 years, will be conducted in accordance with Board-approved procurement plans. Long-term bilateral or solicitation awards will be subject to Board approval.³

All procurement executed under the delegation above, must align with CPA's underlying risk exposure (i.e., load requirements, locational and temporal) that is being hedged consistent with the Energy Risk Hedging Strategy.

5.1.3 Volume Limits

Transactions should not be executed that exceed CPA's load (energy and capacity), renewable or Carbon Free Energy requirements. If there is an adjustment to CPA requirements resulting in the volume of existing transactions exceeding 100% of CPA's requirements, the RMT will determine the offsetting strategy deployed in sufficient proportion to mitigate the encroachment.

An exception to the above limits may be made by the RMT if executing a transaction exceeding load will minimize costs or is necessary to ensure compliance. For example, procuring RA for the entire year could cause CPA to hold excess RA in certain months. Such a transaction would be acceptable if a lower cost alternative transaction or set of transactions that more closely matches monthly needs is unavailable.

5.1.4 Locational Limits

The delivery location for all transactions must support the requirements of CPA's source or sink locations.

5.1.5 CAISO Submission Limits

CPA shall bid at least 80% of its forecast load requirements in the Day-Ahead Market and bids shall not exceed 100% of forecast load requirements.

CPA shall offer no more than 100% of the forecasted generation capability in the Day-Ahead Market. CPA shall follow CAISO protocols for all activity within CAISO.

5.2 Monitoring, Reporting and Instances of Exceeding Risk Limits

The Middle Office is responsible for monitoring and reporting compliance with all limits within the ERMP. If a limit or control is violated, the Middle Office will send notification to the trader responsible for the violation and the RMT. The RMT will discuss the cause and potential remediation of the exceedance to determine next steps for curing the exceedance.

³ The RMT will oversee the solicitation process for long-term procurement. Awards will be presented without market sensitive information (i.e. pricing or other sensitive commercial terms) for Board consideration in accordance with applicable law.

Section 6: CREDIT POLICY AND COUNTERPARTY SUITABILITY

Prior to execution of any transaction, the Front Office will verify that CPA has executed a master agreement with the counterparty, that the counterparty has been evaluated for creditworthiness, and that an approved Credit Limit has been established. No transactions may be executed without first ensuring the transaction falls within the unutilized Credit Limit for the counterparty.

6.1 Master Enabling Agreements and Confirmations

Transactions are governed by master agreements, the forms of which must be prepared by CPA General Counsel and approved by the Board. No transactions may be executed without a fully executed master agreement being on file. Written confirmations of each transaction will contain standard commercial terms and provisions. Material modifications or additions to standard commercial terms in confirmations require approval by legal counsel.

It is CPA's policy to confirm all transactions in writing. All confirmations received from counterparties will be matched against trades in the system of record. Any discrepancies between a confirmation and the system of record may be handled by the Front Office representative that executed the transaction, or if necessary, a Middle Office representative will seek resolution with the counterparty. All confirmations will be kept on file.

6.1.1 Exceptions

It is standard industry practice to not provide written confirmation of certain short-term transactions with a term of one day or less. Additionally, CPA may agree with certain counterparties to alternative methods for confirming certain transactions. Transactions executed in a recorded telephone conversation or recorded instant message in which the offer and acceptance shall constitute the agreement of the parties must be confirmed in writing after-the-fact, with notice being provided to the counterparty within 72 hours.

6.2 Counterparty Suitability

All counterparties shall be evaluated for creditworthiness by the Middle Office prior to execution of any transaction and no less than annually thereafter. Additionally, counterparties shall be reviewed if a change has occurred, or is perceived to have occurred, in market conditions or in a company's management or financial condition. This evaluation, including any recommended increase or decrease to a Credit Limit, shall be documented in writing and include all information supporting such evaluation in a credit file for the counterparty.

A Credit Limit for a counterparty will not be recommended or approved without first confirming the counterparty's senior unsecured or corporate credit rating from one of the nationally recognized rating agencies (S&P, Moody's, and/or Fitch) and/or performing a credit review or analysis of the counterparty's or guarantor's financial statements. The credit analysis shall include, at a minimum, current audited financial statements or other supplementary data that indicates financial strength commensurate with an investment grade rating and consider factors such as:

- Liquidity
- Leverage (debt)
- Profitability
- Net worth

Trade and banking references, and any other pertinent information, may also be used in the review process.

Once a counterparty has been determined to be creditworthy, the Middle Office will propose a Credit Limit for approval by the Executive Director, in consultation with the RMT. Although a counterparty may qualify for a certain maximum Credit Limit, the types of products to be transacted, as well anticipated transaction volumes, terms and other business factors may prompt CPA to select a lower limit that is considered more appropriate.

Counterparties that do not qualify for an unsecured Credit Limit must post an acceptable form of credit support or prepayment prior to the execution of any transaction. A counterparty may choose to provide a guarantee from a third party, provided the third party satisfies the criteria for a Credit Limit as outlined herein.

6.3 Maximum Credit Limit

Each new counterparty Credit Limit or increase to an existing limit will be reviewed by the RMT. The maximum amount of any Credit Limit extended to a counterparty shall not exceed \$40,000,000⁴ unless approved in writing by the Board.

6.4 Credit Review Exceptions

Counterparties not subject to the above credit review criteria include those associated with Day-Ahead and current day purchases where risks associated with market movements is minimal.

6.5 Credit Limit and Monitoring

The Middle Office will monitor the current credit exposure for each counterparty with whom CPA transacts and include such information in the Current Counterparty Credit Risk Report. This report will be submitted to the RMT for review pursuant to the reporting requirements outlined in Section 7.

Current credit exposure is a measure of the known exposures and composed of two primary exposures – (1) realized exposure, and (2) forward exposure. Realized exposure, a payable or receivable amount owed between counterparties, is a measurement of cash flow for billed and unbilled transactions. Forward exposure is a measure of current unrealized exposure and includes the measure of a counterparty's incentive to fulfill contractual obligations. Forward exposure measures the risk associated with having a payment default or the need to replace a transaction in the event of delivery default.

⁴ Approximately 5% of annual power supply costs in 2020.

Section 7: POSITION TRACKING AND MANAGEMENT REPORTING

A vital element in the ERMP is the regular identification, measurement and communication of risk. To effectively communicate risk, all risk management activities must be monitored on a frequent basis using risk measurement methodologies that quantify the risks associated with CPA's procurement-related business activities and performance relative to identified goals.

Minimum reporting requirements are shown below. The reports outlined below will be presented to the RMT. Reports will be generated weekly unless otherwise noted.

- **Financial Model Forecast**

Latest projected financial performance, marked to current market prices, and shown relative to CPA's financial goals.

- **Net Position Report**

Latest forward net position report, by product type (energy, PCC1, PCC2, Carbon Free Energy and RA capacity) for the current and prompt year.

- **Counterparty Credit Exposure**

Current counterparty credit exposure compared against limits approved by CPA, as well as the limit assigned to CPA by the counterparty.

- **Monthly Risk Analysis**

Cash Flow at Risk and stress testing of financial forecasts relative to financial goals. Additional discussion of the specific Cash Flow at Risk metric that CPA will use, and its application, is provided in the Energy Risk Hedging Strategy.

- **Quarterly Board Report**

Update on activities, projected financial performance, and general market outlook to be presented quarterly at Board meetings, communicated in a way to ensure CPA confidentiality and market sensitive data is not released.

Section 8: ERMP REVISION PROCESS

The ERMP will evolve over time as market and business factors change. At least on an annual basis, the Executive Director, in consultation with the RMT, will review the ERMP and associated procedures to determine if they should be amended, supplemented, or updated to account for changing business conditions and/or regulatory requirements. If an amendment is warranted, the ERMP amendment will be submitted to the Board for approval. Changes to ERMP appendices may be approved and implemented by the Executive Director, in consultation with the RMT, with the exception of new transaction types and changes to the Energy Risk Hedging Strategy, which also require Board approval.

8.1 Acknowledgement of ERMP

All CPA Representatives participating in any activity or transaction within the scope of the ERMP shall sign, on an annual basis or upon any revision, a statement approved by the Executive Director, in consultation RMT, that such CPA Representative has:

- Read the ERMP;
- Understands the terms and agreements of said ERMP;
- Will comply with said ERMP;
- If an employee, understands that any violation of said ERMP shall subject the employee to discipline up to and including termination of employment;
- If a consultant, understands that any violation of said ERMP may be grounds for consultant contract termination; and
- If a Board member, understands that any violation of said ERMP shall subject the Board member to action by the Board.

8.2 ERMP Interpretations

Questions about the interpretation of any matters of the ERMP should be referred to the Executive Director.

All legal matters stemming from the ERMP will be referred to CPA counsel.

Appendix A: DEFINITIONS

Back Office: That part of a trading organization which handles transaction accounting, confirmations, management reporting, and working capital management.

CAISO: California Independent System Operator. CAISO operates a California bulk power transmission grid, administers the State's wholesale electricity markets, and provides reliability planning and generation dispatch.

Carbon Free Energy: Energy that is generated from a specific zero carbon emitting generating asset. It is commonly used to note energy from large hydroelectric generation that while non-carbon emitting, is not an RPS-eligible generation source. Sometimes referred to as specified source energy.

CCA: Community Choice Aggregator. CCAs allow local government agencies such as cities and/or counties to purchase and/or develop generation supplies on behalf of their residents, businesses and municipal accounts.

CFTC: Commodity Futures Trading Commission. The CFTC is a U.S. federal agency that is responsible for regulating commodity futures and swap markets. Its goals include the promotion of competitive and efficient futures markets and the protection of investors and market participants against manipulation, abusive trade practices and fraud.

Congestion Revenue Right: A point-to-point financial instrument in the Day-Ahead Energy Market that entitles the holder to receive compensation for or requires the holder to pay certain congestion related transmission charges that arise when the transmission system is congested.

Credit Limit: The maximum amount of financial exposure one party is willing to extend to another.

Day-Ahead Market: The short-term forward market conducted by an Organized Market prior to the operating day. It is intended to efficiently allocate transmission capacity and facilitate purchases and sales of energy and scheduling of bilateral transactions.

FERC: Federal Energy Regulatory Commission. FERC is a federal agency that regulates the interstate transmission of electricity, natural gas and oil. FERC also reviews proposals to build liquefied natural gas terminals, interstate natural gas pipelines, as well as licenses hydroelectric generation projects.

Front Office: That part of a trading organization which solicits customer business, services existing customers, executes trades and ensures the physical delivery of commodities.

Franchise Fee: A franchise fee is a percentage of gross receipts that an IOU pays cities and counties for the right to use public streets to provide gas and electric service. The franchise fee surcharge is a percentage of the transmission (transportation) and generation costs to customers choosing to buy their energy from third parties. IOUs collect the surcharges and pass them through to cities and counties.

IOU: An Investor Owned Utility (IOU) is a business organization providing electrical and/or natural gas services to both retail and wholesale consumers and is managed as a private enterprise.

Limit Structure: A set of constraints that are intended to limit procurement activities.

Middle Office: That part of a trading organization that measures and reports on market risks, develops risk management policies and monitors compliance with those policies, manages contract administration and credit, and keeps management and the Board informed on risk management issues.

PCIA: Power Cost Indifference Adjustment or successor. The PCIA is intended to compensate IOUs for their stranded costs when a bundled customer departs and begins taking generation services from a CCA.

Portfolio Content Category 1 (PCC1) Renewable Energy: Energy and bundled Renewable Energy Credits that is simultaneously procured from an RPS-eligible facility that is directly interconnected to the distribution or transmission grid within a California balancing authority area (CBA); or that is not directly interconnected to a CBA but is delivered to a CBA without substituting electricity from another source.

Portfolio Content Category 2 (PCC2) Renewable Energy: Energy and bundled Renewable Energy Credits that is simultaneously purchased from an RPS-eligible facility, but the energy is firmed and shaped with substitute electricity scheduled into a CBA within the same calendar year as the renewable energy is generated.

Real-Time Market: The real-time market is a spot market in which LSEs can buy power to meet the last few increments of demand not covered in their day ahead schedules, up to 75 minutes before the start of the trading hour.

Resource Adequacy Capacity: A capacity product whereby a Seller commits to a must offer obligation of its generator in the CAISO market and on behalf of a specified Load Serving Entity.

Settlement: Settlement is the process by which counterparties agree on the dollar value and quantity of a commodity exchanged between them during a particular time interval.

Stress testing: Stress testing is the process of simulating different financial outcomes to assess potential impacts on projected financial results. Stress testing typically evaluates the effect of negative events to help inform what actions may be taken to lessen the negative consequences should such an event occur.

Appendix B: ENERGY RISK HEDGING STRATEGY

1.1 Introduction

CPA is routinely exposed to commodity price risk and volume variability risk in the normal conduct of serving the power supply requirements of its customers.

This Energy Risk Hedging Strategy (ERHS) describes the strategy and framework that CPA will use to hedge the power supply requirements of its customers during the prompt calendar year (the calendar year after the current calendar year) plus the following four calendar years. Specific focus is on procurement of the following market-based products:

- Fixed Priced Energy
- Portfolio Content Category 1 Renewable Energy
- Portfolio Content Category 2 Renewable Energy
- Carbon Free Energy
- Resource Adequacy Capacity

In addition to market-based transactions entered into pursuant to this ERHS, CPA will also enter into longer-term power purchase agreements (PPAs) pursuant to statutory requirements (e.g., SB 350 mandate to, by 2021, procure a minimum of 65 percent of RPS requirements under a 10-year or longer power purchase agreement)), as well as voluntary long-term resource acquisition decisions made independently by CPA pursuant to its Integrated Resource Plan or other approved Board-approved strategies. Long-term Power Purchase Agreements (PPAs) will count as hedges as described later in this ERHS.

2.1 Governance

This ERHS shall be updated, as necessary, from time to time and governed by the Energy Risk Management Policy (EMRP) approved by the CPA Board of Directors.

3.1 Hedging Program Goals

The overall goal of the ERHS is to identify exposure to commodity prices, quantify the financial impact variability in commodity prices, load requirements and generation output may have on the ability of CPA to meet its financial program goals, and manage the associated risk.

The primary goals that guide this ERHS are:

- Acquire a portfolio of resources with lower greenhouse gas emissions and higher renewable content than SCE;
- Meet reliability requirements established by the state of California, and operate in a manner consistent with prudent utility practice;

- Maintain competitive retail rates with SCE after adjusting for exit fees (currently the Power Charge Indifference Adjustment or PCIA) and Franchise Fees paid by CPA customers;
- Build financial reserves to ensure the CPA's long-term financial objectives are achieved.

All hedging activities will be conducted to achieve results consistent with the above goals and to meet the power supply requirements of CPA's customers. Any transaction that cannot be directly linked to a requirement of serving CPA's customers, or that serves to reduce risk as measured by the Power Supply Cost at Risk (PSCaR) described below is prohibited.

4.1 Hedging Targets and Strategies

4.1.1 Fixed Price Energy

Fixed Price Energy purchases provide for suppliers to deliver energy – for which CPA will receive energy market revenues – to CPA at a fixed price. They are used to manage the electricity commodity price risk that the CPA faces as a Load Serving Entity. Specific to CPA's customers, Fixed Price Energy hedges are used to provide cost certainty and rate stability.

In the near-term, CPA will predominantly employ Fixed Price Block Energy contracts, which provide for suppliers to deliver a predetermined volume of energy at a constant delivery rate. As CPA enters into long-term, fixed price contracts for renewable and/or carbon-free energy, these will likewise hedge CPA's market risk and, subsequently, reduce the required volume of Fixed Price Block Energy purchases.

When assessing its requirements for Fixed Price Energy, the CPA will forecast the monthly energy requirements of its customers during heavy and light load hours⁵ each month. Forecast load will be determined through use of an econometric model that forecasts both total energy usage and peak demand by customer load class. The model will use historical data to estimate relationships between energy consumption and economic, demographic and/or weather variables. The econometric model will be refined through time as additional load data is acquired through CPA operations.

The CPA will observe the following schedule when hedging its Fixed Priced Energy Requirements:

Time Period	Minimum Hedge % ⁶	Maximum Hedge %
Prompt Month	90	100
Prompt Calendar Year	70	90
CY + 1	50	70
CY + 2	30	50
CY + 3	0	40
CY + 4	0	40

⁵ Heavy Load (On-peak) Hours in wholesale energy markets are 6am to 10pm, Monday through Saturday, excluding New Years Day, Memorial Day, 4th of July, Labor Day, Thanksgiving and Christmas. All other hours during the year are considered Light Load (Off-peak) Hours.

⁶ CPA will exclude the estimated amount of hedge provided to CPA's customers by SCE's portfolio under the current PCIA construct when calculating compliance with the hedge schedule.

The hedge schedule for the Prompt Month will be measured as of 5 days prior to the first day of the month (e.g., on August 27, 2018, CPA will have hedged 90 to 100 percent of its projected energy requirements during September 2018).

The hedge schedule for the Prompt Calendar Year (CY), as well as subsequent 2 calendar years, will be measured as of the first day of each new calendar year (e.g., on January 1, 2019, CPA will have hedged 70 to 90 percent of its forecast energy requirements for CY 2019; 50 to 70 percent of its forecast energy requirements for CY 2020 and 30-50 percent of its forecast energy requirements for CY 2021).

The minimum hedge level will be achieved by implementing a time-driven programmatic strategy. Time-driven programmatic hedges are executed at a predetermined rate pursuant to a time schedule and without regard for market conditions. The purpose of these hedging transactions is to achieve a reduction in variability in power supply costs by gradually increasing the amount of energy hedged as the actual date of consumption approaches. Time-driven strategies avoid the inherent impossibility of trying to consistently and accurately “time the market” to purchase energy at least cost when making hedging decisions. Additionally, a load serving entity the size of CPA needs to spread its procurement efforts over time to effectively manage the potential negative price impacts of procuring a large volume of energy, over a short period of time, in an illiquid market.

Hedging decisions to reach targets between the minimum and maximum hedge levels will be based on price-driven or opportunistic strategies. The purpose of price-driven or opportunistic strategies is to capitalize on market opportunities when conditions are favorable. The CPA will base its decision to execute opportunistic hedges on the anticipated impact to projected power supply costs and the resulting reduction in PSCaR.

Opportunistic hedges may be executed when energy price levels are favorable to lowering the cost of power relative to established program goals and financial projections; alternatively, opportunistic hedges can be executed in adverse market conditions relative to financial goals in order to reduce the potential negative impact of continued upward trending commodity prices relative to established goals.

In executing this ERHS, Fixed-Price Energy hedges may be modified, repositioned or unwound for the purpose of maintaining hedge coverage that matches changes in forecast electric load. This includes the ability of the CPA to use liquid market products to hedge average loads over a defined time period and then later modify its hedges to more precisely match load.

4.1.2 Portfolio Content Category 1 Renewable Energy

In order to cost-effectively meet its GHG-reduction and renewable energy goals, CPA intends to meet a growing share of its energy supply requirements with renewable energy, a large portion of which will be Product Content Category 1 (PCC1) renewable energy. PCC1 renewable energy is sourced from a renewable generator that is either directly interconnected to the California Independent System Operator (CAISO) or another California Balancing Authority or directly scheduled into CAISO without use of substitute energy.

In order to manage price risk of long-term renewable energy, and to allow CPA to prudently and methodically build a portfolio of long-term assets, CPA intends to meet its PCC1 energy targets with a

blend of short and long-term contracts. In the 2018-2020 period, this balance will include a relatively higher share of short-term contracts as the CPA focuses on launching its CCA and establishing a strong financial foundation. While hedging its PCC1 requirements during the next one to two years with contracts that are primarily shorter in term, CPA will observe the following schedule. The hedge schedule percentages shall be measured such that a 100% hedge position equals 75%⁷ of the RPS energy CPA will need to serve all customers at their chosen rate option (e.g. 50% RPS). The hedge schedule shall be measured on December 1 of each year for the Prompt Calendar year and the four subsequent calendar years.

PCC1 Hedge Targets Applicable During Calendar Years 2018-2020

Time Period	Minimum Hedge %	Maximum Hedge %
Prompt Calendar Year	75	100
CY + 1	50	80
CY + 2	30	70
CY + 3	0	70
CY + 4	0	70

Between 2018 and 2021, CPA will increase its focus to longer-term PCC1 contracts, particularly for Calendar Year 2021 and beyond. This shift is necessary to comply with the renewable procurement requirements of SB 350, as well as the fact that new renewable generating facilities typically require long-term PPAs with terms that can range from ten to twenty-five years. CPA's strong interest in delivery of renewable generation to its customers will eventually require voluntary execution of long-term PPAs beyond what is mandated by SB 350.

CPA's eventual goal is to reach a steady state of procurement in which it contracts for four to eight percent of its projected annual PCC1 requirements each year via long-term contract. Doing so will i) allow CPA to steadily reduce its exposure to renewable energy and energy market price risks in a fashion similar to the programmatic hedging approach for Fixed-Price Block Energy and ii) ensure that CPA is in a position to make strategic procurement decisions and, if appropriate, commitments every year.

As CPA's PCC1 portfolio is increasingly comprised of long-term contracts in line with long-term contracting requirements mandated under SB 350, in 2021 and thereafter, CPA shall observe the following schedule while hedging its PCC1 requirements. This hedge schedule shall first be measured on December 1, 2020 and then on December 1 of each subsequent year for the Prompt Calendar year and the two following calendar years.

PCC1 Hedge Targets Applicable Beginning in Calendar Year 2021

Time Period	Minimum Hedge %	Maximum Hedge %
Prompt Calendar Year	65	100

⁷ SB350 requires a minimum of 75% of RPS product used for compliance to come from PCC1 resources.

CY + 1	60	95
CY + 2	55	90
CY + 3	55	90
CY + 4	55	90

4.1.3 Portfolio Content Category 2 Renewable Energy

CPA shall diversify its renewable energy portfolio further by incorporating Portfolio Content Category 2 (PCC2) renewable energy purchases. PCC2 renewable energy is sourced from renewable generators located outside the state of California where that generation is “firmed and shaped” for delivery into California. PCC2 purchases are typically less expensive and shorter in term than PCC1, so they provide a cost-effective and flexible method of augmenting CPA’s renewable energy purchases to meet renewable portfolio content commitments to customers.

CPA will observe the following schedule when hedging its PCC2 renewable energy requirements. The hedge schedule percentages shall be measured such that a 100% hedge position equals 25%⁸ of the RPS energy CPA will need to serve all customers at their chosen rate option (e.g. 50% RPS). In other words, if CPA’s PCC2 position is 100% hedged, then 75% of the RPS energy will come from PCC1 resources. The hedge schedule shall be measured on December 1 of each year for the Prompt Calendar year and the two subsequent calendar years.

Time Period	Minimum Hedge % ⁹	Maximum Hedge %
Prompt Calendar Year	50	100
CY + 1	35	75
CY + 2	20	50
CY + 3	0	25
CY + 4	0	10

It should be noted that there is currently a proceeding underway at the California Public Utility Commission to implement California legislature’s AB 1110, which may impact the reporting and accounting methodologies that apply to PCC2 renewable energy, so the hedging schedule above is subject to change as CPA gains clarity regarding any potential revised methodology.

4.1.4 Carbon Free Energy

In pursuit of its GHG-reduction objectives, CPA shall augment its renewable energy purchases outlined above with energy purchases from carbon-free energy generating facilities, which are typically hydro-

⁸ SB 350 allows a maximum of 25% of RPS product used for compliance to come from PCC2 resources.

⁹ RPS compliance rules set minimum requirements for PCC1 procurement and maximum limits for PCC2 procurement as a percentage of the total RPS compliance portfolio. If insufficient PCC2 product is available in the market, the Risk Management Team may approve shifting volumes from the PCC2 hedge schedule into the PCC1 hedge schedule.

electric resources located in California that are too large to qualify as Eligible Renewable Resources (30 MW or greater) or located outside of California. Similar to PCC2 renewable energy contracts, carbon-free energy purchases are typically short-term, most frequently one to three years in length.

CPA will observe the following schedule when hedging its Carbon-Free renewable energy requirements. The hedge schedule shall be measured on December 1 of each year for the Prompt Calendar year and the two subsequent calendar years.

Time Period	Minimum Hedge %	Maximum Hedge %
Prompt Calendar Year	75	100
CY + 1	50	75
CY + 2	25	50
CY + 3	0	25
CY + 4	0	10

In setting the above targets, it is important to note that the purchase of Carbon Free Energy is a voluntary requirement set by the CPA Board to exceed SCE's GHG emissions goals. In determining the total volume of Carbon Free Energy to be hedged, the CPA Board may elect to increase or reduce the total quantity of Carbon Free Energy included in CPA's portfolio as it seeks to balance multiple program objectives, including financial goals such as targets for financial reserves and retail rates. The Board will determine CPA's target quantity of Carbon Free Energy annually during the rate-setting process.

4.1.5 Resource Adequacy Capacity

As a Load-Serving Entity (LSE) in California, CPA is required to demonstrate both annually and monthly that it has secured sufficient energy capacity to provide for its share of California's energy load; this capacity is referred to as Resource Adequacy (RA). Because CPA serves customers in SCE's service territory, CPA has local RA requirements specific to the Los Angeles Basin and Big Creek/Ventura local areas, as well as general RA requirements for Southern California ("South of Path 26 System"), a portion of which must be Flexible RA. Flexible RA requirements ensure resources are available on the grid to provide ancillary services such as ramping and regulation.

RA is typically transacted via contracts that vary in length from one month to three years, and it is currently bought and sold via a bilateral market, which not only provides cost-effective contracting opportunities but also proves at times to be fragmented and volatile. While a waiver process exists to excuse LSEs from their RA requirements, it is the goal of CPA to meet its requirements and not use the RA waiver process.

CPA will observe the following schedule when hedging its RA requirements. The hedge schedule shall be measured for each RA product that CPA is required to procure on December 1 of each year for the Prompt Calendar year and the two subsequent calendar years.

Time Period	Minimum Hedge %	Maximum Hedge %
Prompt Calendar Year	90	100
CY + 1	50	90
CY + 2	30	80
CY + 3	0	30
CY + 4	0	15

5.1 Hedge Program Metrics

The success of the Energy Risk Hedging Strategy will be measured by realizing power supply costs in line with the budgeted power supply costs used to set customer rates, as well as by reducing CPA's exposure to commodity price risk. The following two metrics will be utilized to manage the Energy Risk Hedging Strategy:

- Current projected power supply costs will be compared to budgeted power supply costs where budgeted costs will be based on the assumptions used at the time customer generation rates are set. Current power supply costs shall use all fixed priced contracts executed as of the date of the report. All open positions will be marked to market and compared to the budgeted power supply costs.
- Power Supply Cost at Risk (PSCaR). PSCaR represents a statistical view of what could happen to CPA's power supply costs assuming that no action is taken to manage its portfolio from the date of the analysis through the end of the period of time being analyzed. The potential cost will be calculated using a historical sampling methodology that considers on- and off-peak periods separately over the remaining life of the transactions. The PSCaR calculation will consider potential variability in load and generation supply. The PSCaR will be calculated by rank ordering the portfolio cost and measuring the difference between the 95th percentile and the expected power cost outcome.

These metrics will be reviewed when making price-driven or opportunistic hedging decisions to ensure that the transactions are consistent with the goals of the Energy Risk Hedging Strategy. These metrics will be updated and reported by TEA to the CPA on a monthly basis.

6.1 Reporting Requirements

The following reports are required to manage the hedge program and to ensure its success:

- Net Position Report for each product
- Current Projected Power Supply Costs compared to budget
- Power Supply Cost at Risk
- GHG intensity

Appendix C: AUTHORIZED TRANSACTION TYPES

All transaction types listed below must be executed within the limits set forth in the ERMP. Definitions for each product are provided in Appendix A.

- **CAISO Market Products**
 - **Day-Ahead Market Energy** (Energy purchased from the CAISO Day-Ahead Market.)
 - **Real-Time Market Energy** (Energy purchased from the CAISO in the Real-Time Market)
 - **Congestion Revenue Rights** (A point-to-point financial instrument in the Day-Ahead Energy Market that entitles the holder to receive compensation for or requires the holder to pay certain congestion related transmission charges that arise when the transmission system is congested.)
 - **Convergence Bids** (Financial positions, either demand or supply, taken in the Day-ahead Market and liquidated in the Real-Time Market.)
 - **Inter-Scheduling Coordinator Trades** (A trade between two Scheduling Coordinators that is a settlement service that CAISO offers to parties of a bilateral contract as a means of offsetting CAISO settlement charges against bilateral contractual payment responsibilities.)
- **Physical Energy Products**
 - **Short-Term Energy** (Energy traded in the CAISO market or bilaterally for a duration less than one year.)
 - **Long-Term Energy** (Energy traded in the CAISO market or bilaterally for a duration greater than one year.)
 - **Physical Over-the-Counter (OTC) Options** (Call options that give the buyer the right, but not the obligation, to buy an underlying power product at agreed upon terms as detailed in a confirmation agreement; or put options that give the seller the right, but not the obligation, to sell an underlying power product at agreed upon terms as detailed in a confirmation letter.)
- **Resource Adequacy Capacity** (A capacity product whereby a Seller commits to a must offer obligation of its generator in the CAISO market and on behalf of a specified Load Serving Entity.)
- **Import Capability Rights** (Entitles an LSE to count Resource Adequacy products at a specified import location toward its Resource Adequacy Requirements.)
- **Physical Environmental Products**
 - **PCC1 and PCC2 Renewable Energy** (see definition in Appendix A)
 - **Carbon Free Energy** (see definition in Appendix A)
 - **Air Resource Board Allowances** (An allowance is a tradeable permit issued by the California Air Resource Board to emit one metric ton of a carbon dioxide equivalent greenhouse gas emission.)
- **Financial Hedging Products**
 - **Futures Contracts** (A contract to buy or sell a commodity (electricity) at a predetermined price at a specified time in the future. Futures Contracts are standardized for quality and quantity to facilitate trading on a futures exchange (e.g., Intercontinental Exchange).)
 - **Swaps** (Financial contracts in which one party agrees to pay a cash flow calculated by multiplying a fixed volume by a fixed price (fixed price payer) and the other party agrees to

- pay a cash flow calculated by multiplying the same fixed volume times a market reference index price (floating price payer). At settlement, the party owing the higher amount pays the net difference. Swaps are transacted in over-the-counter markets.)
- **Options on Futures** (Call options give the buyer the right, but not the obligation, to purchase a Futures Contract. Put options give the buyer the right, but not the obligation, to sell a Futures Contract.)
 - **Options on Swaps (Swaptions)** (call options give the buyer the right, but not the obligation, to enter into a swap transaction as the fixed price payer. A put option gives the buyer the right, but not the obligation, to enter into a swap transaction as the floating priced payer.)
 - **Transmission** (The reservation and transmission of capacity and energy between two points on a transmission provider's system.)
 - **Tolling Agreements** (Agreement between a power buyer and a power generator, under which the buyer supplies the fuel, either physically or financially, and receives an amount of power generated based on an assumed conversion rate at an agreed cost.)

Appendix D: NEW TRANSACTION TYPE APPROVAL FORM

New Transaction Type Approval Form

Prepared By:

Date:

New Transaction Type Name:

Business Rationale and Risk Assessment:

- Product description – including the purpose, function, expected impact on net revenues (i.e., increase, manage volatility, control variances, etc.) and/or benefit to CPA
- Identification of the in-house or external expertise that will be relied upon to manage and support the new or non-standard transaction
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues
- How the exposures to the risks above will be managed by the limit structure
- Proposed valuation methodology (including pricing model, where appropriate)
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new product
- Proposed accounting methodology
- Proposed Middle Office work flows/methodology, including systems
- Brief description of the responsibilities of various departments within CPA who will have any manner of contact with the new or non-standard transaction

Reviewed by:

Director of Power Planning & Procurement

Date

Chief Operating Officer

Date

Executive Director

Date

Appendix E: NOTICE OF CONFLICT OF INTEREST

To: [insert title]

Declaration of Conflict of Interest

I understand that I am obligated to give notice in writing to Clean Power Alliance of any interest or relationship that I may have in any counterparty that seeks to do business with Clean Power Alliance, and to identify any real or potential conflict of interest such counterparty has or may have with regard to any existing or potential contract or transaction with Clean Power Alliance, within 48-hours of becoming aware of the conflict of interest.

I would like to declare the following existing/potential conflict of interest situation arising from the discharge of my duties concerning Clean Power Alliance activities covered by the scope of the ERMP:

- a) Persons/companies with whom/which I have official dealings and/or private interests:

- b) Brief description of my duties which involved the persons/companies mentioned in item a) above.

Position and Name: _____

Signature: _____

Date: _____

Appendix F: SAMPLE CODE OF MARKETING AND TRADING PRACTICES

See next page.

**Clean Power Alliance of
Southern California
Code of Marketing and Trading Practices
July __, 2018**

Definitions

Marketing and Trading Employee – Any employee, contractor, consultant, or agent of CPA who engages in procurement activity.

Scope of Code

This Code of Marketing and Trading Practices (the “Code”) applies to all CPA marketing and trading employees. Each person subject to this Code is required to read, understand, and abide by the provisions contained in this Code.

Purpose

In addition to demonstrating CPA’s commitment to ethical business practices, this Code is designed to ensure that CPA complies with its obligations under state and federal laws, rules and regulations promulgated by various governmental agencies, and applicable policies adopted by its Clients. This Code defines and affirms the values and principles that CPA’s employees must follow in conducting their business activities. The Code is intended to complement the other policies, procedures and processes of CPA and to guide traders and marketers as they negotiate transactions, arrange for transmission, and manage risk.

Compliance with the Code allows CPA to assure its Clients, counterparties, potential customers, regulators, and the public that its business activities are, and will continue to be, conducted with integrity and unlawful/unethical trading practices will not be tolerated.

Questions about compliance with industry and company regulations as well as with this Code should be referred to CPA’s General Counsel.

Policy

CPA’s marketing and trading employees shall:

1. Conduct business in good faith and in accordance with all applicable laws, regulations, tariffs and rules.
2. Endeavor to always act in the best interests of CPA’s customers.
3. Not disseminate, cause to be disseminated or facilitate the dissemination of known false or misleading information, or engage in transactions in order to exploit known false or misleading information.
4. Engage only in transactions with legitimate business purposes.
5. Not knowingly arrange or execute wash trades.
6. Not engage in any activity with the intent to alter any market price or otherwise interfere with the normal operation of a well-functioning competitive market.
7. Not engage in price reporting or furnishing transaction prices to any entity that collects prices to be used in the calculation of a price index or for distribution to subscribers, without prior written approval of CPA’s General Counsel.
8. Not collude with other market participants to: (i) affect the price of any commodity; (ii) allocate territories, customers or products; or (iii) otherwise restrain competition.

9. Not engage in transactions for commodities or services without the intention of providing those specific commodities or services.
10. Not reserve service, attempt to reserve service, access information, or attempt to access information from any transmission service provider except through means available to all eligible customers.
11. Successfully complete yearly CPA compliance training.
12. Comply with requirements that trading and marketing activities are recorded and retained.
13. Cooperate with any audit or investigation into trading and marketing activities.

Duty to Report Violations and Non-Retaliation Clause

A CPA employee who believes that a violation of the Code has occurred is required to promptly notify the Chief Operating Officer. CPA shall make every effort to ensure the confidentiality of the employee. CPA shall not discharge, suspend, demote, harass, layoff, deny a promotion, or take any other retaliatory action against an employee solely as a result of the act of reporting a suspected violation of the code. This in no way affects CPA's rights as an employer with respect to all other issues. CPA will monitor and follow up to ensure that employees who have reported alleged violations have not been subject to retaliation.

Disciplinary Action

Any failure to abide by this Code, including the Duty to Report Violations, will result in disciplinary action. All potential violations are handled on a case-by-case basis and will result in a full review by, at minimum, the following individuals: the employee's immediate supervisor and CPA's General Counsel. Factors that are considered in setting the disciplinary action plan include but are not limited to: source of violation discovery (self-reported, peer-reported, reported by a third party, via internal procedures, or the result of an audit), intent (accidental or intentional), type and magnitude of risk that the employee exposed CPA to (financial, reputation, etc.), and frequency of the violation (first offense or history of multiple offenses). The disciplinary actions taken may involve demotion, loss of compensation (suspension without pay), and termination of employment.

I agree to abide by the provisions of CPA's Code of Marketing and Trading Practices.

Signature

Printed Name

Date



Energy Procurement Schedule: 2018 and 2019

Procurement Schedule: July 2018 – June 2019

Over the next 12 months, CPA will procure the following wholesale energy and capacity products:

- PCC1 Renewable Energy
- PCC2 Renewable Energy
- Carbon-free Energy
- Resource Adequacy
- Fixed Price Energy

All procurement will adhere with CPA's Energy Risk Management Policy (ERMP) and Energy Risk Hedging Strategy, including prescribed energy hedge schedules.

Procurement Schedule: July 2018 – June 2019

	Renewable Energy (PCC1)	Carbon-free Energy	Renewable Energy (PCC2)	Resource Adequacy	Fixed Price Energy
Ongoing	Bilateral procurement as appropriate to fill near-term open positions and capitalize on time-sensitive opportunities.				Monthly portfolio assessment and purchases per ERMP and Hedging Schedule
2018					
Jul			2018 PCC2 Solicitation	2018-2021 RA Solicitation	
Aug	Short-Term and Long-Term Renewable and Carbon-free Energy Solicitation				
Sep					
Oct					
2019					
May	Long-Term Renewable Energy Solicitation				
Jun				2019-2022 RA Solicitation	

1 RESOLUTION NO. 18-009

RESOLUTION OF THE BOARD OF DIRECTORS OF CLEAN POWER ALLIANCE OF SOUTHERN CALIFORNIA DELEGATING AUTHORITY TO THE EXECUTIVE DIRECTOR PURSUANT TO THE ENERGY RISK MANAGEMENT POLICY

THE BOARD OF DIRECTORS OF CLEAN POWER ALLIANCE OF SOUTHERN CALIFORNIA HEREBY RESOLVES AS FOLLOWS:

WHEREAS, Clean Power Alliance of Southern California (formerly known as Los Angeles Community Choice Energy Authority) ("Clean Power Alliance" or "CPA") was formed on June 27, 2017;

WHEREAS, the CPA Board of Directors ("Board"), on April 5, 2018, adopted Resolution 18-006 delegating authority to the Executive Director for certain activities related to power procurement;

WHEREAS, the Board approves the Energy Risk Management Policy ("ERMP") which establishes a framework by which the Board, staff, and consultants will conduct power procurement and related business activities that may impact the risk profile of CPA; and

WHEREAS, any power procurement activity that falls outside the parameters of the ERMP will be brought to the Board for consideration.

NOW, THEREFORE, BE IT RESOLVED, BY THE BOARD OF DIRECTORS OF THE CLEAN POWER ALLIANCE OF SOUTHERN CALIFORNIA:

1. The Executive Director is hereby authorized to conduct power procurement and related transactions pursuant to the adopted ERMP.
2. The Board has determined that the approval of the ERMP is not a project under CEQA because the ERMP does not have the potential for causing a significant impact on the environment under State CEQA Guidelines Section 15061(b)(3).

ADOPTED AND APPROVED this ____ day of _____ 2018.

Chair

ATTEST:

Secretary



COMMUNITY CHOICE
P A R T N E R S
SECURING YOUR COMMUNITY'S ENERGY FUTURE

Desert Community Energy ERMP





Policy No. 18-09

Energy Risk Management Policy

May 2018

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Section 1: POLICY OVERVIEW

1.1 Background and Purpose

Desert Community Energy (“DCE”) is a public joint powers agency located within the Coachella Valley. DCE desires to implement and administer a community choice aggregation (“CCA”) program for cities in the Coachella Valley that elect to become participants. The CCA program will give its members an opportunity to join together to procure electricity supplies and implement local programs that meet the goals of the local communities. Electricity procured to serve customers will continue to be delivered over SCE’s transmission and distribution system.

Presently, DCE’s Members include the following:

- City of Cathedral City
- City of Palm Desert
- City of Palm Springs

Providing retail electric generation service to customers enrolled in the CCA program exposes DCE to risks such as retail load uncertainty (due to weather, customer opt-out, and other factors), energy market price, counterparty credit, SCE generation and PCIA rate competitiveness and other regulatory risks.

This Energy Risk Management Policy (“Policy”) establishes DCE’s Energy Risk Management Program (“Program”) including risk management functions and procedures to manage the risks associated with power procurement activities.

The ultimate purpose of this Policy is to help DCE increase the likelihood of achieving its goals by specifying management responsibilities, organizational structures, risk management standards, and operating controls and limits necessary to properly identify and manage DCE’s exposure to risk.

1.2 Scope

Unless otherwise explicitly stated in this Policy, or other policies approved by the Board, this Policy applies to all power procurement and related business activities that may impact the risk profile of DCE. This Policy documents the framework by which management, staff, consultants and The Energy Authority (TEA) will:

- Identify and quantify risk
- Develop and execute procurement strategies
- Create a framework of controls and oversight
- Monitor, measure and report on the effectiveness of the Program

To ensure successful operation of the CCA program, DCE has partnered with experienced consultants to provide energy-related services. Specific to power procurement, DCE has partnered with TEA. At the outset of the CCA program, TEA will be executing the preponderance of front- (transacting), middle- (monitoring) and back-office (settlement) related activities on DCE’s behalf as discussed at Section 4.4. In providing these services for DCE, TEA will adhere to and be governed by this Policy. TEA maintains its own

risk management policies and procedures, following industry practices of segregation of duties, which also govern activities executed on DCE's behalf.

1.3 Energy Risk Management Objective

The objective of the Energy Risk Management Policy is to provide a framework for conducting procurement activities that maximizes the probability of DCE meeting the goals listed in Section 2.1.

Pursuant to this Policy, DCE will identify and measure the magnitude of the risks to which it is exposed and that contribute to the potential for not meeting identified goals.

1.4 Policy Administration

This Policy document has been reviewed and approved by the DCE Board of Directors ("Board"). The Risk Management Team ("RMT") and Board must approve amendments to this Policy, except for the appendices, which may be amended with approval of only the RMT. The RMT must give notice to the Board of any amendment it makes to an appendix or a reference policy or procedure document.

Section 2: GOALS AND RISK EXPOSURES

2.1 Policy Goals

To help ensure long term viability for the CCA, DCE has outlined the following Policy goals. These goals establish metrics used for modeling and measuring risk exposures of the CCA.

- DCE will target to maintain competitive retail rates with SCE after adjusting for the PCIA and Franchise Fee.
- DCE will target, during the initial years of operation, to fund financial reserves with the following objectives:
 - Establish long-term business sustainability
 - Build collateral for power procurement activities
 - Establish an investment grade credit rating
 - Develop a source of funds for investment in generation and other local programs
 - Stabilize rates and dampen year-to-year variability in procurement costs

The goals outlined above are incorporated into the financial models that are used in modeling and measuring risk exposures. It is important to note that the goals listed above are not intended to be a comprehensive list of goals for DCE. Rather, the above reflect a subset of goals critical to long-term business viability of DCE.

2.2 Risk Exposures

DCE's CCA program faces a range of risks during launch and ongoing operation including:

- Customer Opt-Out risk
- Market risk
- Regulatory risk
- Volumetric risk
- Model risk
- Operational risk
- Counterparty credit risk
- Reputation risk

Customer Opt-Out Risk

Customer opt-out risk is the primary risk DCE faces. Customer opt-out risk includes any condition or event that creates uncertainty within, or a diminution, of DCE's customer base, thereby increasing the potential for DCE to not meet its Policy goals. DCE faces other risks, but the ultimate concern is often how these other risks may affect customer opt-outs. This Policy addresses this paramount risk, as well as the secondary risk types listed below. These risks are not all inclusive but are identified as the risk factors driving DCE's success.

The most relevant measures of the success of this Policy include:

- Retail rate competitiveness with SCE
- Financial reserve level

For the purpose of this Policy, risk exposure is assessed on all transactions (energy, environmental attributes, capacity, etc.) executed by TEA on behalf of DCE, or by DCE unilaterally, as well as the risk exposure of open positions and the impacts of these uncertainties on the CCA's load obligations. The following are components of DCE's energy risk that will be assessed, monitored and managed.

2.3.1 Market Risk

Market risk is the uncertainty of DCE's financial performance due to variable commodity market prices (market price risk) and uncertain price relationships (basis risk). Variability in market prices creates uncertainty in DCE's procurement costs and can materially impact DCE's financial position. Market risk is managed by regular measurement, execution of approved procurement and Congestion Revenue Right strategies and the limit structure set forth in this Policy.

2.3.2 Regulatory Risk

CCAs remain comparatively new legal entities in the State of California and are subject to an evolving legal and regulatory landscape. Additionally, CCAs are in direct competition with California's Investor Owned Utilities ("IOUs") in retail electricity, which face the risk of stranded investments in generating assets and power purchase agreements procured in the past to serve now departing CCA loads. The manner in which the stranded costs of these legacy power supplies are allocated to departing CCA loads is the subject of regulatory proceedings at the CPUC. New and evolving regulations result in retail rate competitiveness risks that are unique to CCAs. DCE will manage regulatory risk by:

- Regular monitoring and analysis of legislative and regulatory proceedings impacting CCAs;
- Actively participating in and representing DCE customer interests during regulatory and legislative proceedings;
- Regular monitoring and reporting of actual and projected financial results including probability-based and stressed financial results assuming a range of market and retail rate scenarios (both DCE and SCE);
- Structuring procurement strategies with the objective function of maintaining a favorable retail rate savings relative to SCE;

2.3.3 Volumetric Risk

Volumetric risk is the uncertainty of DCE's financial performance due to variability in the quantity of retail load served by DCE. Retail load uncertainty results from customer opt-outs, temperature deviation from normal, unforeseen adoption of behind the meter generation by DCE customers, as well as local, state and national economic conditions. Volume risk is managed by taking steps to:

- Quantify anticipated SCE generation and PCIA rates, and variability therein;
- Quantify variability in procurement costs;
- Monitor and adjust for non-regulatory factors driving volumetric uncertainty (e.g., weather);
- Adopt a formal procurement strategy;

- Implement a key accounts program and maintain strong relationships with the local community;
- Monitor trends in customer onsite generation, economic shifts, and other factors that affect electricity customer consumption and composition;
- Expand DCE's customer base by incorporating other eligible cities within the Coachella Valley into the CCA program.

2.3.4 Model Risk

Model risk is the uncertainty of DCE's financial performance due to potentially inaccurate or incomplete characterization of a transaction or power supply portfolio elements due to fundamental deficiencies in models and/or information systems. Model risk is managed by:

- TEA and Risk Management Team approval and ratification of financial and risk models;
- Ongoing review of model outputs as part of controls framework;
- Ongoing DCE and TEA staff education and participation in CCA industry forums;
- Ongoing update and improvement of models as additional information and expertise is acquired

2.3.5 Operational Risk

Operational risk is the uncertainty of DCE's financial performance due to weaknesses in the quality, scope, content, or execution of human resources, technical resources, and/or operating procedures within DCE. Operational risk can also be exacerbated by fraudulent actions by employees or third parties or inadequate or ineffective controls. Operational risk is managed through:

- The controls set forth in this Policy
- RMT oversight of procurement activity
- Timely and effective management reporting
- Staff resources, expertise and/or training reinforcing a culture of compliance
- Ongoing and timely internal and external audits

2.3.6 Counterparty Credit Risk

Counterparty credit risk is the potential that a counterparty will fail to perform or meet its obligations in accordance with terms agreed to under contract. DCE's exposure to counterparty credit risk is controlled by the limit controls set forth in the Credit Policy described in Section 6.

2.3.7 Reputation Risk

Reputation risk is the potential that DCE's reputation is harmed, causing customers to opt-out of DCE's service and migrate back to SCE. Reputational risk is managed through:

- Implementation and adherence to this Energy Risk Management Policy
- Establishment and adherence to industry best practices including both those adopted by other CCAs, as well as those adopted by traditional municipal electric utilities.

2.4 Risk Measurement Methodology

A vital element in DCE's Energy Risk Management Policy is the regular identification, measurement and communication of risk. To effectively communicate risk, all risk management activities must be monitored on a frequent basis using risk measurement methodologies that quantify the risks associated with DCE's procurement-related business activities and performance relative to identified goals.

Risk measurement of DCE's position will be performed using a method that calculates projected procurement costs on an annual basis at various probabilities and that further provides a comparison of projected DCE retail rates to those of SCE. The rate comparison will be adjusted for actual and projected PCIA and Franchise Fee charges. Risk measurement methodologies shall be re-evaluated on a periodic basis to ensure DCE and TEA adjust their methods to reflect the evolving regulatory and competitive landscape. The implementation of these methods shall be overseen and validated by TEA and ratified by the RMT.

Section 3: BUSINESS PRACTICES

3.1 General Conduct

It is the policy of DCE that all personnel, including the Board, management, and agents, adhere to standards of integrity, ethics, conflicts of interest, compliance with statutory law and regulations and other applicable DCE standards of personal conduct while employed by or affiliated with DCE.

3.2 Trading for Personal Accounts

All DCE Directors, management, employees, consultants, and agents participating in any transaction or activity within the coverage of this Policy are obligated to give notice in writing to DCE of any interest such person has in any counterparty that seeks to do business with DCE, and to identify any real or potential conflict of interest such person has or may have with regard to any existing or potential contract or transaction with DCE. Further all persons are prohibited from personally participating in any transaction or similar activity that is within the coverage of this Policy, or prohibited by California Government Code § 1090, and that is directly or indirectly related to the trading of electricity and/or environmental attributes as a commodity.

If there is any doubt as to whether a prohibited condition exists, then it is the employee's responsibility to discuss the possible prohibited condition with her/his manager or supervisor.

3.3 Adherence to Statutory Requirements

Compliance is required with rules promulgated by the state of California, California Public Utilities Commission, California Energy Commission, Federal Energy Regulatory Commission (FERC), Commodity Futures Trading Commission (CFTC), and other regulatory agencies.

Congress, FERC and CFTC have enacted laws, regulations, and rules that prohibit, among other things, any action or course of conduct that actually or potentially operates as a fraud or deceit upon any person in connection with the purchase or sale of electric energy or transmission services. These laws also prohibit any person or entity from making any untrue statement of fact or omitting to state a material fact where the omission would make a statement misleading. Violation of these laws can lead to both civil and criminal actions against the individual involved, as well as DCE. This Policy is intended to comply with these laws, regulations and rules and to avoid improper conduct on the part of anyone employed by DCE. These procedures may be modified from time to time by legal requirements, auditor recommendations, RMT requests, and other considerations.

In the event of an investigation or inquiry by a regulatory agency, DCE will provide legal counsel to employees. However, DCE will not appoint legal counsel to an employee if DCE's General Counsel and Executive Director determine that the employee was not acting in good faith within the scope of employment.

DCE employees are prohibited from working for another power supplier, CCA or utility in a related position while they are simultaneously employed by DCE unless an exception is authorized by the Board. For clarity, this prohibition is not intended to prevent DCE staff from performing non-CCA activities on behalf of DCE (or the Coachella Valley Association of Governments) in the normal course of its business.

3.4 Transaction Type, Regions and Markets

Authorized transaction types, regions and markets are listed in Appendix B to this Policy. These transaction types, regions and markets are and shall continue to be focused on supporting DCE's financial policies, including approved procurement strategies. New or non-standard transaction types may provide DCE with additional flexibility and opportunity but may also introduce new risks. Therefore, transaction types, regions and markets not included in Appendix B, or transactions within already approved transaction types that are substantially different from any prior transaction executed by DCE, must be approved by the RMT prior to execution using the process defined below.

When seeking approval for a new or non-standard transaction type, region, and/or market, a New Transaction Approval Form, as shown in Appendix C, is to be drafted describing all significant elements of the proposed transaction. The proposal write-up will be prepared by TEA and will, at a minimum, include:

- A description of the benefit to DCE, including the purpose, function and expected impact on costs (i.e.; decrease costs, manage volatility, control variances, etc.)
- Identification of the in-house and/or external expertise that will manage and support the new or non-standard transaction type
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues
- How the exposures to the risks above will be managed by the limit structure
- Proposed valuation methodology (including pricing model, where appropriate)
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new transaction type
- Proposed accounting methodology
- Proposed work flows/methodology (including systems)

It is the responsibility of TEA's Middle Office to ensure that relevant departments have reviewed the proposed transaction and that material issues are resolved prior to submittal to the RMT for approval. If approved, Appendix B to the Policy will be updated to reflect the new transaction type.

3.5 Counterparty Suitability

TEA's counterparty credit limits and approval processes will govern counterparty suitability for all transactions executed by TEA on behalf of DCE. TEA will provide a credit review and recommendation, consistent with the credit policies described in Section 6, for any counterparty with whom DCE contracts directly.

3.6 System of Record

TEA's Middle Office will maintain a set of records for all transactions executed in association with DCE procurement activities. The records will be maintained in US dollars and transactions will be separately recorded and categorized by type of transaction. This system of record shall be auditable.

3.7 Transaction Valuation

Transaction valuation and reporting of positions shall be based on objective, market-observed prices. Open positions will be valued (marked-to-market) daily, based on consistent valuation methods and data

sources. Whenever possible, mark-to-market valuations should be based on independent, publicly available market information and data sources.

3.8 Stress Testing

In addition to limiting and measuring risk using the methods described herein, stress testing shall also be used to examine performance of the DCE portfolio under potential adverse conditions. Stress testing is used to understand the potential variability in DCE's projected procurement costs, and resulting retail rate impacts and competitive positioning, associated with low probability events. The TEA Middle Office will perform stress-testing of the portfolio on a monthly basis and distribute results to the RMT.

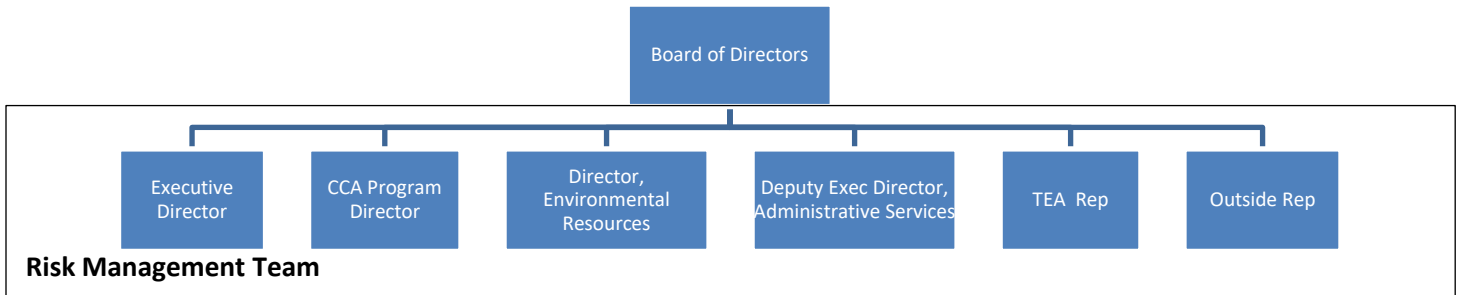
3.9 Trading Practices

It is the expressed intent of this Policy to prohibit the acquisition of risk beyond that encountered in the efficient optimization of DCE's generation portfolio and execution of procurement strategies. As such, speculative transactions are prohibited. In the course of developing operating plans and conducting procurement activities, DCE recognizes that expertise must be employed by TEA staff, and it is not the intent of this Policy to restrain the legitimate application of analysis and market expertise in executing procurement strategies intended to minimize costs within the constraints of this Policy. If any questions arise as to whether a proposed transaction(s) constitutes speculation, TEA shall conduct an analysis of the transaction and the RMT shall review the transaction(s) to determine whether the transaction(s) would constitute speculation and document its finding in the meeting minutes.

Section 4: ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES

4.1 Risk Management Organizational Structure

Below is a high-level organization chart describing DCE's risk management governance.



4.2 Board of Directors

The DCE Board of Directors has the responsibility to review and approve this Policy. With this approval, the Board assumes responsibility for understanding the risks DCE is exposed to due to CCA Program activity and how the policies outlined in this document help DCE manage the associated risks. The Board of Directors is also responsible to:

- Determine DCE strategic direction
- Understand the procurement strategy employed
- Approve risk exposures beyond the RMT's authority
- Approve voting members of the RMT

4.3 Risk Management Team (RMT)

The RMT is responsible for implementing, maintaining and overseeing compliance of this Policy. The voting members of the RMT shall be Board-approved DCE staff members and an independent outside third-party representative (if such representative is deemed necessary and approved by the Board). A representative from TEA will serve as a non-voting member. Each voting member will be assigned one vote. The current voting members of the RMT are:

- Executive Director
- CCA Program Director
- Director, Environmental Resources
- Deputy Executive Director, Administrative Services
- Independent outside third-party

The primary goal of the RMT is to ensure that the procurement activities of DCE are executed within the guidelines of this Policy and are consistent with Board directives. The RMT is also responsible to consider and propose recommendations to this Policy when conditions dictate.

Pursuant to direction from the Board of Directors and the limitations specified by this Policy, the RMT and the Executive Director maintain full authority over all procurement activities for DCE. This authority includes, but is not limited to, taking any or all actions necessary to ensure compliance with this Policy.

The RMT is responsible for overseeing implementation of this Policy, procurement strategies, and the adoption of new product types. The RMT is also responsible for ensuring procurement strategies are consistent with DCE's strategic objectives and for reviewing financial results. The RMT shall meet at least quarterly and record business in meeting minutes that will be approved by the RMT. No decision of the RMT is valid unless a majority of voting members has stated approval with a quorum of voting members participating in the vote, including the Executive Director. All decisions by the RMT, other than those made by common consent, shall be made by simple majority vote of the RMT members.

The RMT maintains the authority and responsibility to:

- Approve and ensure that all procurement strategies are consistent with this Policy;
- Determine if changes in procurement strategies are warranted;
- Approve new transaction types, regions, markets and delivery points;
- Understand financial and risk models used by TEA;
- Understand counterparty credit review models and methods for setting and monitoring credit limits;
- Receive and review reports as described in this Policy;
- Meet to review actual and projected financial results and potential risks;
- Escalate to the Board of Directors with any risks beyond the RMT's authority;
- Review summaries of limit violations and recommend corrective actions, if necessary;
- Review the effectiveness of DCE's energy risk measurement methods;
- Maintain this Policy;
- Monitor regulatory and legislative activities

4.4 Power Manager

DCE has partnered with TEA as its Power Manager. TEA, as outlined in its Risk Policy, maintains a strong segregation of duties, also referred to as "separation of function" that is fundamental to manage and control the risks outlined in this Policy. The Power Manager will provide education to the RMT on the risk and credit models, methods and processes that it uses to fulfill its obligations under this Policy. Individuals responsible for legally binding DCE to a transaction will not also perform confirmation, or settlement functions. With this in mind, TEA's responsibilities are divided into front-middle-back office activities, as described below.

4.4.1 Power Manager - Front Office

The Power Manager's Front Office has overall responsibility for (1) managing all commodity and transmission activities related to procuring and delivering resources needed to serve DCE's load, (2) analyzing fundamentals affecting load and supply factors that determine CCA's net position, and (3) transacting within the limits of this Policy, and associated policies, to balance loads and resources, and

maximize the value of DCE's assets through the exercise of approved optimization strategies. Other duties associated with these responsibilities include:

- a. Assist in the development and analysis of risk management hedging products and strategies, and bring recommendations to the RMT
- b. Prepare a monthly operating plan for the prompt months that gives direction to the day-ahead and real-time trading and scheduling staff regarding the bidding and scheduling of CCA's resource portfolio in the CAISO market
- c. Develop, price and negotiate hedging products
- d. Forecast day-ahead and monitor/ forecast same-day loads
- e. Keep accurate records of all applicable transactions they enter

4.4.2 Power Manager – Middle/Back Office

The Power Manager Middle Office provides independent market and credit risk oversight. The Power Manager Middle Office is functionally and organizationally separate from the Front Office. The Power Manager Back Office provides support with a wide range of administrative activities necessary to execute and settle transactions and to support the risk control efforts (e.g. transaction entry and/or checking, data collection, billing, etc.) consistent with this Policy. The Power Manager Back Office is functionally and organizationally separate from the Front Office.

The Power Manager's Middle and Back Offices have primary responsibility for trading controls and for ensuring agreement with counterparties regarding the terms of all trades, including forward trading. The Power Manager has the primary responsibility for:

- a. Estimating and publishing daily forward monthly power and natural gas price curves for a minimum of the balance of the current year through the next calendar year
- b. Calculating and maintaining the net forward power positions of CCA
- c. Ensuring that CCA adheres to all risk policies and procedures of both CCA and the Power Manager in letter and in intent
- d. Maintaining the overall financial security of transactions undertaken by the Power Manager on behalf of CCA
- e. Implementing and enforcing credit policies and limits
- f. Handling confirmation of all transactions and reconciling differences with the trading counterparties
- g. Reviewing trade tickets for adherence to approved limits
- h. Ensuring all trades have been entered into the appropriate system of record
- i. Ensuring that both pre-schedule and actual delivery volumes and prices are entered into the physical database
- j. Carrying out month-end checkout of all transactions each month
- k. Reviewing models and methodologies and recommending RMT approval

Section 5: DELEGATION OF AUTHORITY

With the approval of the Policy, the DCE Board is explicitly delegating operational control and oversight to the RMT and Power Manager, as outlined through this Policy. Specifically, to facilitate daily operations of the CCA, the Board is delegating transaction execution authorities shown in the table below.

Position	Maturity Limit	Term Limit	Volume Limit (MWh) ¹	Value Limit ²
Risk Management Team	30 Months	24 Months	1,000,000	\$4,000,000
Executive Director	24 Months	18 Months	750,000	\$2,000,000
TEA	18 months	12 Months	500,000	\$1,000,000

¹Volume limit applies only to energy purchases, including index-based renewable and carbon-free energy purchases.

²Value limit apply to non-energy product transactions (e.g., Resource Adequacy).

These authorities will be applied to wholesale power procurement executed outside of the California Independent System Operator (“CAISO”) markets. These limits provide both DCE and TEA needed authorities to manage risks as they arise. Transactions falling outside the delegations above require Board approval prior to execution. Activity with CAISO is excluded from this table due to the nature of the CAISO market, where prices for activity may not be known until after transactions are committed.

All procurement executed under the delegation above, must align with the DCE’s underlying risk exposure (load requirements, locational and temporal) that is being hedged consistent with the approved **Procurement Strategy**.

5.2 Monitoring, Reporting and Instances of Exceeding Risk Limits

The TEA Middle Office is responsible for monitoring and reporting compliance with all limits within this Policy. If a limit or control is violated, the TEA Middle Office will send notification to the TEA trader responsible for the violation and the RMT. The RMT will discuss the cause and potential remediation of the exceedance to determine next steps for curing the exceedance.

Section 6: CREDIT POLICY

During startup of DCE, it is expected that transactions will be executed by TEA on TEA agreements, and thus DCE is exposed to pass-through credit risk. As the CCA builds its own counterparty master trading agreements, transactions executed utilizing DCE's agreements will carry direct credit risk. For activity on TEA and/or CCA agreements, DCE will adopt a scaling methodology to adjust TEA's credit limits to DCE's risk tolerance. For scaling with DCE counterparties, where an agreement exists between DCE and an entity, the RMT will approve changes to credit limits, otherwise TEA will automatically scale the TEA limit to the DCE risk tolerance.

All procurement activities executed by TEA on behalf of DCE, using TEA's counterparty agreements, will be subject to the credit policies and procedures outlined in TEA's Energy Risk Management Policy. TEA's credit policy requires that all counterparties be evaluated for creditworthiness by the TEA Middle Office prior to execution of any transaction and no less than annually thereafter. Additionally, counterparties shall be reviewed if a change has occurred, or perceived to have occurred, in market conditions or in a company's management or financial condition. This evaluation, including any recommended increase or decrease to a credit limit, shall be documented in writing and includes all information supporting such evaluation in a credit file for the counterparty. A credit limit for a counterparty will not be recommended or approved without first confirming the counterparty's senior unsecured or corporate credit rating from one of the nationally recognized rating agencies and/or performing a credit review or analysis of the counterparty's or guarantor's financial statements. The TEA credit analysis shall include, at a minimum, current audited financial statements or other supplementary data that indicates financial strength commensurate with an investment grade rating. Trade and banking references, and any other pertinent information, may also be used in the review process.

Counterparties that do not qualify for a credit limit must post an acceptable form of credit support or prepayment prior to the execution of any transaction. A counterparty may choose to provide a guarantee from a third party, provided the third party satisfies the criteria for a credit limit as outlined in TEA's Energy Risk Management Policy.

6.1 Credit Limit and Monitoring

In executing transactions on DCE's behalf, TEA will observe a pass-through counterparty credit maximum limit equal to \$2.0 million.

The TEA Middle Office will establish continuous monitoring of the current credit exposure for each counterparty with whom TEA transacts on behalf of DCE and include such information in the current Counterparty Credit Risk Report. This report will be made available, reviewed and communicated to the RMT pursuant to the reporting requirements outlined in Section 7.

Section 7: POSITION TRACKING AND MANAGEMENT REPORTING

Minimum reporting requirements are shown below. The reports outlined below will be made available to RMT members and TEA staff:

- **Daily Financial Model Forecast**

Latest projected financial performance, marked to current market prices, and shown relative to financial goals.

- **Monthly Net Position Report**

Prepare a forward net position report, not less frequently than monthly, and report the results to the RMT.

- **Monthly Pass-through Counterparty Credit Exposure**

This report will show how the credit exposures for transactions that TEA executes on behalf of DCE will pass-through TEA to DCE.

- **Monthly Risk Analysis**

This will include a Cash Flow at Risk and stress test of financial forecast relative to financial goals.

- **Quarterly Board Report**

Update on activities and projected financial performance to be presented quarterly at DCE Board meetings.

Section 8: POLICY REVISION PROCESS

DCE's Energy Risk Management Policy will evolve over time as market and business factors change. At least on an annual basis, the RMT will review this Policy and associated procedures to determine if they should be amended, supplemented, or updated to account for changing business conditions and/or regulatory requirements. If an amendment is warranted, the Policy amendment will be submitted to the DCE Board for approval. Changes to appendices to this Policy may be approved and implemented by the RMT.

8.1 Acknowledgement of Policy

Any DCE employee participating in any activity or transaction within the scope of this Policy shall sign, on an annual basis or upon any revision, a statement approved by the RMT that such employee has:

- Read DCE's Energy Risk Management Policy
- Understands the terms and agreements of said Policy
- Will comply with said Policy
- Understands that any violation of said Policy shall be subject to employee discipline up to and including termination of employment.

8.2 Policy Interpretations

Questions about the interpretation of any matters of this Policy should be referred to the RMT.

All legal matters stemming from this Policy will be referred to General Counsel.

Appendix A: AUTHORIZED TRANSACTION TYPES, REGIONS AND MARKETS

All transaction types listed below must be executed within the limits set forth in this Policy. *(The following transaction types can be 'nonstandard' at DCE subject to RMT approval)*

Over the Counter Products

- CAISO Market Products
 - Day-ahead and Real-time Energy
 - Congestion Revenue Rights
 - Convergence
 - Inter Scheduling Coordinator Transactions
 - Tagging into and out of CAISO
- Physical Power Products
 - Short and Long-Term Power
 - Physical OTC Options
- Physical Resource Adequacy Capacity
- Physical Environmental Products
 - Renewable Energy Credits
 - Specified Source Power
 - Carbon Allowances and Obligations

The point of delivery for all products must be at a location on the CAISO transmission grid.

Appendix B: NEW TRANSACTION APPROVAL FORM

New or Non-Standard Transaction Approval Form

Prepared By:

Date:

New or Non-Standard Transaction Name:

Business Rationale and Risk Assessment:

- Product description – including the purpose, function, expected impact on net revenues (i.e., increase, manage volatility, control variances, etc.) and/or benefit to DCE
- Identification of the in-house or external expertise that will be relied upon to manage and support the new or non-standard transaction
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues
- How the exposures to the risks above will be managed by the limit structure
- Proposed valuation methodology (including pricing model, where appropriate)
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new product
- Proposed accounting methodology
- Proposed Middle Office work flows/methodology, including systems
- Brief description of the responsibilities of various departments within DCE who will have any manner of contact with the new or non-standard transaction

Reviewed by:

CCA Program Director

Date

TEA Representative

Date

Executive Director

Date

Appendix C: DEFINITIONS

Back Office: That part of a trading organization which handles transaction accounting, confirmations, management reporting, and working capital management.

Bilateral Transaction: Any physical or financial transaction between two counterparties, neither of which is an exchange or market entity (e.g., MISO).

Cash Flow at Risk (CFaR): A measure of the potential shortfall in cash flow from a specified level during a specified period of time at a specified confidence level. The CFaR of any Portfolio is equal to the Portfolio's current Mark-to-Market value less its Terminal Value.

CAISO: California Independent System Operator. CAISO operates a California bulk power transmission grid, administers the State's wholesale electricity markets, and provides reliability planning and generation dispatch.

CCA: Community Choice Aggregator. CCAs allow local government agencies such as cities and/or counties to purchase and/or develop generation supplies on behalf of their residents, businesses and municipal accounts.

CFTC: Commodity Futures Trading Commission. The CFTC is a U.S. federal agency that is responsible for regulating commodity futures and swap markets. Its goals include the promotion of competitive and efficient futures markets and the protection of investors against manipulation, abusive trade practices and fraud.

Commodity: A basic good used in commerce that is interchangeable with other commodities of the same type. Commodities are most often used as inputs in the production of other goods or services. The quality of a given commodity may differ slightly, but it is essentially uniform across producers. When they are traded on an exchange, commodities must also meet specified minimum standards, also known as a basis grade.

Confirmation Letter: A letter agreement between two counterparties that details the specific commercial terms (e.g., price, quantity and point of delivery) of a transaction.

Congestion Revenue Right: A point-to-point financial instrument in the Day-Ahead Energy Market that entitles the holder to receive compensation for or requires the holder to pay certain congestion related transmission charges that arise when the transmission system is congested.

Counterparty Credit Risk: The risk of financial loss resulting from a counterparty to a transaction failing to fulfill its obligations.

CPUC: California Public Utilities Commission

Day-ahead Market: The short term forward market for efficiently allocating transmission capacity and facilitating purchases and sales of energy and scheduled Bilateral Transactions conducted by an Organized Market prior to the operating day.

Delivery point: The point at which a commodity will be delivered and received.

Energy Risk Management Policy: Energy Risk Management Policy is defined on page 3 of this document.

FERC: Federal Energy Regulatory Commission. FERC is a federal agency that regulates the interstate transmission of electricity, natural gas and oil. FERC also reviews proposals to build liquefied natural gas terminals, interstate natural gas pipelines, as well as licenses hydroelectric generation projects.

Front Office: That part of a trading organization which solicits customer business, services existing customers, executes trades and ensures the physical delivery of commodities.

Franchise Fee: A franchise fee is a percentage of gross receipts that an IOU pays cities and counties for the right to use public streets to provide gas and electric service. The franchise fee surcharge is a percentage of the transmission (transportation) and generation costs to customers choosing to buy their energy from third parties. IOUs collect the surcharges and pass them through to cities and counties.

Hedging products: Hedging products means capacity, energy, renewable energy credits or other products related to a specific transaction.

IOU: An Investor Owned Utility (IOU) is a business organization providing electrical and/or natural gas services to both retail and wholesale consumers and is managed as a private enterprise.

Limit structure: A set of constraints that are intended to limit procurement activities.

Limit violation: Any time a defined limit is violated.

Mark to Market Value: the value of an asset based on its current market price.

Middle Office: That part of a trading organization that measures and reports on market risks, develops risk management policies and monitors compliance with those policies, manages contract administration and credit, and keeps management and the Board informed on risk management issues.

Net Forward Position: A forecast of the anticipated electric demands of a load serving entity compared to existing resource (generation and/or power purchase agreements) commitments.

Nonstandard: Nonstandard refers to any product that is not commonly transacted among market participants in forward markets. The nonstandard attribute of the product could be a function of a number of factors such as volume, delivery period and/or term.

Opt-out Rate: Typically expressed as a percentage, the Opt-out Rate measures the ratio of eligible customers of a CCA that have elected to remain a bundled service customer of the IOU rather than take generation services from the CCA.

PCIA: Power Cost Indifference Adjustment. The PCIA is intended to compensate IOUs for their stranded costs when a bundled customer departs and begins taking generation services from a CCA.

Schedule: Schedule or Scheduling means the actions of the counterparts to a transaction, and/or their designated representatives, of notifying, requesting and confirming to each other the quantity and type of product to be delivered on a given day.

Separation of function: Separation of function, also referred to as “segregation of duties,” is part of a complete risk control framework. Individuals responsible for legally binding the organization to a transaction should not also perform confirmation, clearance or accounting functions. DCE will maintain appropriate segregation of duties in its organization and activities.

Settlement: Settlement is the process by which counterparties agree on the dollar value and quantity of a commodity exchanged between them during a particular time interval.

Speculation: Speculation is the act of trading an asset with the expectation of realizing financial gain resulting from a change in price in the asset being transacted.

Stranded cost: Stranded costs commonly refer to generation costs that an IOU (although could be any load serving entity) is allowed to collect from customers through retail rates but that will not be recovered if the generation is sold in wholesale electricity markets.

Stress testing: Stress testing is the process of simulating different financial outcomes to assess potential impacts on projected financial results. Stress testing typically evaluates the effect of negative events to help inform what actions may be taken to lessen the negative consequences should such an event occur.

Terminal Value: The Terminal Value is the present value of all future cash flows.



COMMUNITY CHOICE
P A R T N E R S
SECURING YOUR COMMUNITY'S ENERGY FUTURE

San Jose Community Energy ERMP



EXHIBIT A***City of San José, California*****COUNCIL POLICY**

TITLE ENERGY RISK MANAGEMENT POLICY	PAGE 1 of 9	POLICY NUMBER 1-23
EFFECTIVE DATE May 1, 2017	REVISED DATE	
APPROVED BY COUNCIL ACTION: 5/1/2018, Item 7.1, Res. No. 78574		

1.0 PHILOSOPHY, OBJECTIVES AND SCOPE

This Energy Risk Management Policy (ERMP) outlines the philosophies and objectives of San José Community Energy (SJCE) as set by the San José City Council ("Council"). The Energy Risk Management Regulations (ERMR) also adopted by SJCE expands on the roles, strategies, controls, and authorities authorized in this policy to form a comprehensive energy risk management program. The ERMR shall be read in conjunction with this ERMP.

1.1 Risk Philosophy

The overall goal of this ERMP is to:

- a. Serve SJCE's customers' needs subject to Council approved risk tolerance limits.
- b. Provide as much energy supply cost certainty for SJCE's customers as possible while maintaining a least cost supply portfolio.
- c. Meet all the portfolio objectives such as renewable energy content and greenhouse gas--free supplies.

As a city, SJCE is in the business of generation, transmission, and procurement of energy for the benefit of its customers. SJCE's objective is to develop the least cost supply portfolio to meet load requirements of its customers, while maximizing revenues from sales of surplus energy, capacity, and other wholesale energy and transmission services (e.g. resource optimization). However, unlike a private-sector entity, SJCE's primary purpose in the power supply business is to serve its customers. SJCE's goal is to be a cost hedger for its customers' load and, is therefore, precluded by this policy from engaging in speculative activities typical to many organizations orientated toward profit maximization.

SJCE management recognizes that certain risks are incidental to normal power supply operations and hedging activities. SJCE's goal is to avoid unnecessary risk and to limit, to the extent practicable, any risks associated with normal cost-hedging activities. This document serves as a vehicle to describe and define the limits for activities considered appropriate for SJCE in a normal course of business.

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1.2 Business Activities

A primary part of SJCE's main business is to procure power supplies, capacity, and reserves to meet its customer load requirements. The resource (capacity/energy) supply portfolio may consist of fixed and variable priced supply contracts of varying lengths and agreements for other related supplies and services needed to ensure reliable delivery of electricity to SJCE's customers.

1.3 Transacting Objectives

SJCE's overall transacting objective is to meet the load requirements of its customers with an optimized resource supply portfolio. SJCE's objectives when transacting on behalf of its customers for the procurement of energy and energy related supplies and services are as follows:

- a. Meet customer load requirements including energy, capacity, and reserves;
- b. Provide stable rates for SJCE's customers;
- c. Obtain the best available price for power supply while complying with the requirements of this policy and other objectives established by the Council (e.g. renewable energy and GHG-free policy goals);
- d. Act to limit exposure to extreme market system changes;
- e. Follow effective wholesale counterparty credit management procedures; and
- f. Develop and maintain SJCE's investment grade credit rating.

1.4 Scope of Policy

This ERMP addresses risks arising from SJCE's participation in the wholesale energy markets, and applies to all energy and energy related transactions made by SJCE. This ERMP does not address the following types of general property and casualty business risk: fire, accident, and casualty; health, safety, and workers' compensation; general liability; and other such typically insurable perils. The term "risk management," as used herein, is therefore understood to refer solely to risks related to participation in wholesale energy markets as herein defined.

SJCE is exposed to three quantifiable risks: load and resource variability (volumetric), cost variability (price), and counterparty credit risk. From the perspective of risk mitigation, SJCE's primary objective is to cover load and optimize the value of assets. Taking risks to arbitrage market opportunities, or risks unrelated to SJCE's normal power supply business activities, is not permitted.

SJCE is also exposed to regulatory and operational risks. However, these exposures are not quantifiable as they affect structural change. As a result, these risk categories are managed as separate enterprise risk exposures and are not directly governed by this ERMP.

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This ERMP prescribes the management organization, authority and processes to monitor, measure, and control the risks to which SJCE is exposed in the normal course of business. Methodologies used to measure, monitor, and control these risks shall be established by the City Manager's Risk Oversight Committee (ROC), in accordance with sound utility practices as included in the ERMR.

1.5 Applicability

This ERMP is effective immediately upon its adoption by the Council. It applies to SJCE's wholesale supply operations, short and long-term contracting for energy, capacity, credit risk management, and other related ancillary activities undertaken by SJCE.

1.6 Policy Review and Amendments

Prudence is required in implementing all policies and procedures. Market and industry norms, technology and risk tolerances tend to change over time. Therefore, this policy should be reviewed as needed, to make adjustments in response to changes in business objectives and/or industry norms. At a minimum this policy should be reviewed annually. Amendments to this ERMP shall be done only by approved Resolution of the Council.

2.0 RISK STRATEGY & PARAMETERS

An important aspect of implementing an overall energy risk management policy is the development of related strategies to mitigate all related risks associated with energy transacting activities. The key strategies of SJCE are outlined below.

2.1 Counterparty Risk Management

Counterparty risk is defined as the exposure to economic loss resulting from default by a party to a contract (e.g., a counterparty). Counterparty risk affects both contracts requiring physical settlement and those specifying monetary settlement. For all fixed price energy transactions, the counterparty must possess at least a BBB+ (or equivalent investment grade rating) by a nationally recognized statistical rating organization (NRSRO). SJCE staff may consider counterparties with a rating below investment grade, or a counterparty without a NRSRO rating on a case-by-case basis, with the approval of the ROC.

Effective wholesale counterparty management and credit analysis is essential to mitigate the counterparty risks associated with commodity transactions in the energy markets. The objective is to preserve SJCE's capital, liquidity, and supply reliability by limiting counterparty credit risk and supplier concentration to acceptable levels. Methodologies to achieve this objective are set forth in the ERMR.

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2.2 Balanced Load

SJCE shall maintain an integrated and balanced portfolio of resources to cover its customer load with a risk framework that includes both volume and cost of the portfolio.

2.3 Minimum Coverage Requirements

SJCE shall establish minimum coverage requirements for capacity and energy as determined by the ROC and outlined in the ERM.

2.4 Diversification of Portfolio

SJCE shall strive to develop a resource portfolio that includes diversification in the type of resources, contract duration, geographic location, counterparty, pricing terms, cash reserves and types of products.

2.5 Purchase to Cover Load Serving Obligations – No Speculation

As discussed in Section 1.3, SJCE's overall objective for energy procurement activities is to cover the load serving obligations of its customers. In the course of performing these activities, SJCE shall not engage in activities that expose its customers to speculative transactional risks, and shall only utilize approved transaction parameters as determined by the ROC and outlined in the ERM.

2.6 Use of Derivatives and Financial Transactions

Use of financial derivatives or transactions (as opposed to physical or "embedded" options) is not allowed by SJCE. These include transactions used to set price caps and floors, or hedge against load/price volatility. Examples include:

- Exchange traded Puts and Calls;
- Electric Futures;
- Electric Options; and
- Weather Derivatives.

The use of Congestion Revenue Rights (CRR's) is permitted by SJCE and is not considered use of derivatives or financial transactions. CRR's are financial instruments made available through the CAISO's CRR Allocations and Auctions. CRRs are acquired primarily to offset transmission congestion costs.

3.0 RISK CONTROLS

3.1 Control Principles

SJCE will strive to conduct its energy risk management activities in accordance with best practices of the energy industry, but implementing such practices must be cost justified and balanced between costs and benefits. Processes and control systems

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must be in place that allow SJCE to identify, measure, monitor, control, and track its risk exposures. These processes and control systems shall include the following risk management control principles:

- Appropriate segregation of duties and internal controls will be used;
- Appropriate systems to ensure accurate and effective management reporting;
- Necessary resources in place to achieve management objectives;
- Attract and retain skilled and trained personnel;
- Cross-train and provide cross coverage;
- Employees conducting energy transactions are free of conflicts of interest;
- Authority and approval delegation is commensurate with accountability and capability;
- Performance measurement and reporting incorporate risk and return measures; and
- Ongoing monitoring of control effectiveness.

3.2 Internal Controls

Internal controls shall be based on proven principles that meet the stringent requirements of generally accepted auditing standards (GAAS), financial institutions and credit rating agencies. The required controls shall include all customary and usual business practices designed to 1) prevent errors and improprieties, 2) ensure accurate and timely reporting of results of operations and other information pertinent to management, and 3) facilitate attainment of business objectives.

3.3 Segregation of Duties

Responsibilities related to energy transacting shall be segregated in a manner consistent with the control principles listed above by means of clearly defined roles and responsibilities for the Front Office, Middle Office, and Back Office operations. Such roles and responsibilities can also be provided by a qualified third party services provider. Specific roles, responsibilities, and organizational structure of these functions are outlined in Section 4 of the ERMP.

These controls shall be fully integrated into all business activities of SJCE, and there shall be active participation by senior management in risk management processes.

3.4 Conflicts of Interest

In accordance with the California Political Reform Act, consultants shall cause each person performing services for the SJCE to complete annual conflict of interest filings and disclose investments as required by the FPPC and this Section.

All SJCE employees who are engaged in energy supply resource transactions, counterparty credit evaluation, or oversight of the foregoing and are employed in any job classification listed in the SJCE Conflict of Interest Code are required to complete

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annual conflict of interest filings on FPPC Form 700 and disclose investments as required by that code.

In addition to the foregoing disclosure requirement, SJCE employees engaged in energy supply resource transactions, counterparty credit evaluation or oversight of the foregoing, are barred from investing in any company with whom SJCE has consummated energy or related purchases or sales within the last two years.

Such employees must divest existing direct holdings in energy counterparties prior to engaging in any negotiating, evaluating, transacting or oversight functions. The ban on investment and requirement for divestment applies regardless of whether or not the investment would be of sufficient size (\$2,000) to require disclosure on FPPC Form 700.

SJCE employees supervising staff who are subject to this policy are responsible for routinely reviewing Form 700 of each such staff member for the purpose of identifying potential financial conflicts of interest. City Attorney will assist in reviewing these forms and providing legal advice in connection with such reviews upon request.

4.0 ROLES, RESPONSIBILITIES, & ORGANIZATION

This section of the ERMP defines the overall roles and responsibilities for implementation of this ERMP. The coordinated efforts of personnel across several Departments are required to successfully implement SJCE's risk management program. Section 4 of the ERMP outlines the basic roles and responsibilities of each organizational function. Specific details and the specific roles and responsibilities of the oversight and operational divisions within the energy risk management program structure at SJCE are outlined in the ERMR, as developed by the City Manager's ROC and revised from time to time.

4.1 City Council

The Council has the ultimate oversight over SJCE operations and is responsible for establishing an organizational-wide framework for risk management and ensuring that risk management results are achieved as planned. The Council shall approve and establish organizational policies for risk management and delegate to the City Manager the responsibility for implementing the ERMP. With responsibility for the ultimate oversight over SJCE operations, the Council shall be responsible to ensure the risk management results are achieved in accordance with the ERMP.

4.2 City Manager

The City Manager serves as the chief administrative officer of the City. The City Manager is responsible for administering City operations and staff, advising the City Council, managing the day-to-day delivery of public services, and implementing Council policies. The Council acknowledges that the City Manager shall establish the ROC and may delegate certain functions to the ROC, which delegation is ratified by this ERMP.

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4.3 Director of Community Energy

The Director of Community Energy (“Director”) has overall responsibility for implementing the ERMP and for communicating risk management issues to the City Manager and Council. The Director shall be responsible for delegating specific duties for carrying out the policy and ensuring compliance with it by all affected SJCE employees or contractors.

4.4 Risk Oversight Committee

The Risk Oversight Committee (ROC) is responsible for overseeing compliance with risk management policies within SJCE. The ROC serves as the highest level of organizational risk management. The ROC shall consist of seven voting members: the City Manager, the Director of Community Energy, the Director of Finance, the City’s Risk Manager, the Budget Director, the Community Energy Department’s Deputy Director of Power Resources, and the Community Energy Department’s Division Manager for Administration and Finance. The City Attorney will provide legal advice to the ROC. A quorum for the ROC to do business shall be no less than five ROC Committee members, or their designees.

Each ROC member shall have one vote, and shall appoint a voting alternate. The ROC will meet at least quarterly, to act on the responsibilities mentioned above. Minutes to each meeting will be maintained per the City’s record retention policy. The Director of Community Energy shall make annual reports to the appropriate Committee and Council regarding business transacted by the ROC.

The ROC shall have the responsibility for ensuring that business is conducted in accordance with the ERMP. The City Manager’s ROC shall adopt and keep current “Energy Risk Management Regulations,” which shall define in detail the internal controls, strategies, and processes for managing risks covered under the ERMP. Specific ROC responsibilities are outlined in detail in the ERMR.

4.5 Front Office (Planning and Procurement)

The Deputy Director of Power Resources is responsible for managing the Front Office, and can be supported by qualified third party suppliers. The Front Office is responsible for resource planning and procuring resources to meet the physical, financial, and contractual requirements of SJCE, with load/resource balancing provisions and such other arrangements as may be approved by the Council in the future. The function includes contract administration, managing the risk assumptions for electricity transactions, including physical and financial needs analyses, energy purchases and sales, procurements of capacity, ancillary services and coordinating energy delivery scheduling. The Front Office is responsible to ensure that the procedures and processes needed to transact business within the ERMP are in place and they perform all duties related to actual transacting in the wholesale energy markets. The Front Office is the primary interface with potential wholesale transacting counterparties. Front Office activities and detailed responsibilities are outlined in the ERMR.

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4.6 Middle Office (Controls and Reporting)

The Community Energy Department's Division Manager of Administration and Finance is responsible for managing the Middle Office in collaboration with the Finance Department. The Community Energy Department's Administration and Finance Division will conduct the duties of the Middle Office, and/or are supported by a qualified consultants and service providers. Its primary purpose is to manage risk oversight and controls. The Middle Office provides independent oversight of the risks assumed by the Front Office in the course of transacting energy products and services. The Middle Office must be independent from the Front Office functions. Detailed responsibilities of the Middle Office are described in the ERMR.

4.7 Back Office (Settlements and Recording)

The Community Energy Department's Division Manager of Administration and Finance is responsible for managing the Back Office in collaboration with the Finance Department. The Back Office is primarily responsible for settlement of bills, recording transactions, bookkeeping and accounting, and contract compliance. It is responsible for providing assurance of accurate transaction records and settlements. Back Office functions are conducted by personnel in the Community Energy Department's Administration and Finance Division and are supported by staff in the Finance Department and qualified consultants and service providers. Detailed responsibilities of the Back Office are described in the ERMR.

4.8 Auxiliary Functions

Additional issues impacting the overall power supply and risk management program include establishment of financial reserve requirements, which are generated by auxiliary support functions in the Community Energy Department's Administration and Finance Division and the City Manager's Budget Office.

The Community Energy Department's Administration and Finance Division in collaboration with the City Manager's Budget Office is responsible for preparation of the budget and the calculation of rates used to bill customers for their related power supply usage. They are also responsible for the establishment of reserves necessary for credit risks related to counterparty credit as mentioned in the ERMP, but as more clearly defined in the ERMR.

4.9 Authorities, Delegations, Limits, and Prohibitions

All executed transactions shall conform to the policies set forth herein. It shall be the responsibility of the ROC, to establish appropriate individual transacting authority limits for the various personnel involved in the Front Office function. All staff with designated responsibility for Middle Office or Back Office functions are strictly prohibited from executing any wholesale transactions. The Middle Office shall be responsible for

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informing counterparties of such approved authorizations, including transacting authority and restrictions, along with product types and/or term and dollar limits.

5.0 POLICY COMPLIANCE

5.1 Compliance Exceptions

Compliance exceptions are actions which violate the authority limits or directives set forth herein or in the ERMR as developed and adopted pursuant hereto by the ROC.

5.2 Reporting of Exceptions

The Director of Community Energy shall notify the ROC of exceptions to mandated policies, procedures, and regulations within 48 hours after they are identified, and ensure Front Office prepare a full report for review and discussion at the next ROC meeting.

5.3 Audit

Compliance with this ERMP and with the specific ERMR requirements instituted pursuant to this ERMP, shall be subject to examination by the City Auditor and SJCE's independent auditors or by such other reviewers that SJCE or ROC may appoint to evaluate the effectiveness of mandated controls.

5.4 Reserves

The ROC is responsible for ensuring adequate reserves for energy price exposure and credit losses are maintained by SJCE. The reserve estimate methodology, should be established in collaboration with the City Manager's Budget Office and it shall be reviewed and approved as needed to ensure appropriate reserve levels are maintained and funded. It should be set and reviewed annually as part of the Budget process.

5.5 Systems, Tools, and Training

SJCE employees who are authorized to perform energy risk management functions on behalf of SJCE shall be provided with the necessary systems and tools to support all risk management processes.

Provision shall be made in the budgets submitted for each group which performs market risk management functions on behalf of SJCE for the acquisition and maintenance of computer systems, software, communications equipment, data services and other analytical, measurement and reporting tools.

Provision shall also be made in the budgets submitted for each group which performs market risk management functions on behalf of SJCE for managers and staff to attend seminars and courses in risk management on a regular basis.



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MCE Clean Energy ERMP





Policy 015: Energy Risk Management Policy

**Energy Risk Management Policy
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Energy Risk Management Policy

1.0 General Provisions

1.1 Background and Purpose of Policy

Marin Clean Energy's (MCE) mission is to address climate change by reducing energy-related greenhouse gas emissions through the use of renewable energy supply and energy efficiency programs at stable and competitive rates for customers while providing local economic and workforce benefits.

This Energy Risk Management Policy (Policy) has been developed to help ensure that MCE achieves its mission and adheres to policies established by the MCE Board of Directors (Board), power supply and related contract commitments, good utility practice, and all applicable laws and regulations.

This Policy defines MCE's general energy risk management framework and provides management with the authority to establish processes for monitoring, measuring, reporting, and controlling market and credit risks to which MCE is exposed in its normal course of business.

1.2 Scope of Business and Related Market Risks

MCE provides energy to retail customers in its service territory that entails business activities such as; bilateral purchases and sales of electricity under short, medium and long term contracts; scheduling of load and generation of electricity into California Independent Systems Operator (CAISO) markets; retail marketing of electricity to consumers within its service territory; compliance with voluntary objectives and regulatory requirements as it relates to carbon free and renewable portfolio standard (RPS) compliant energy; participation in CAISO Congestion Revenue Rights ("CRRs") market; managing the balance of load and generation over short, medium and long term horizons; and compliance with California Public Utilities Commission (CPUC) Resource Adequacy (RA) requirements.

Examples of energy market risks include, but are not limited to, the following:

- Market Price Risk
- Counter party Credit and Performance Risk
- Load and Generation Volumetric Risk
- Operational Risk
- Liquidity Risk
- Regulatory/Legislative Risk

This Policy focuses on the following:

- Risk Management Goals and Principles
- Definitions of Risks
- Internal Control Principles
- Risk Management Business Practices
- Risk Management Governance

This Policy does not address the following types of general business risk, which are treated separately in other official policies, ordinances and regulations of MCE: fire, accident and casualty; health, safety, and workers' compensation; general liability; and other such typically insurable perils. The term "risk management," as used herein, is therefore understood to refer solely to market risks as herein defined, and not those other categories of risk.

1.3 Policy Administration

This version of the Energy Risk Management Policy adopted by the MCE Board of Directors the XXth day of XXX, 20XX, will be reviewed and updated as needed every two calendar years by the Technical Committee. This Policy may be amended as needed by MCE's Technical Committee.

1.4 Policy Distribution

This Policy shall be distributed to all MCE employees and third-party contractors who are engaged in the planning, procurement, sale and scheduling of electricity on MCE's behalf and/or in other MCE departments providing oversight and support for these activities.

2.0 Risk Management Goals

The goals of energy risk management shall be to:

- [1] assist in achieving the business objectives in the Integrated Resource Plan (IRP) and Reserve Policy including retail rate stability and competitiveness and the accumulation of financial reserves;
- [2] avoid losses and excessive costs which would materially impact the financial condition of MCE;
- [3] establish the parameters for energy procurement and sales activity to obtain the best possible price while ensuring compliance with Board-approved risk limits;
- [4] assist in assuring that market activities and transactions are undertaken in compliance with established procurement authorities, applicable laws, regulations and orders; and
- [5] encourage the development and maintenance of a corporate culture at MCE in which the proper balance is struck between control and facilitation and in which professionalism, discipline, technical skills and analytical rigor come together to achieve MCE objectives.

3.0 Risk Management Principles

MCE manages its energy resources and transactions for the purpose of providing its customers with low cost renewable, carbon free and other energy while at the same time minimizing risks. Undue exposure to CAISO or bilateral energy market volatility for the purpose of potentially achieving lower costs but at the risk that costs may, in fact, be much higher, will not be accepted. Procurement and hedging strategy will be determined by analytical methods supplemented by experienced judgement. MCE will use that experienced judgement and its analytical tools to assess system cost drivers such as weather, short term energy prices, load variation and operational constraints to manage timing and quantity of purchases and sales of energy and related services, consistent with the limits identified in

this policy. When actions are taken that are consistent with this Policy and for the purpose of the combined goal of low costs and optimized risk, those actions are considered to be consistent with the objectives of this policy. MCE will not engage in transactions, without proper authorization, whose purpose is not tied to managing costs and risks or are outside of the limits identified in this policy.

4.0 Definitions of Market Risks

The term “market risks,” as used here, refers specifically to those categories of risk which relate to MCE’s participation in wholesale and retail markets as Load Serving Entity (LSE) and its interests in long-term contracts. Market risks include market price risk, counterparty credit and performance risk, load and generation volumetric risk, operational risk, liquidity risk, and regulatory and legislative risk. These categories are defined and explained as follows.

4.1 Market Price Risk

Market Price risk is the risk that wholesale trading positions, long-term supply contracts and generation resources may move “out of the money,” that is, become less valuable in comparison with similar positions, contracts or resources obtainable at present prices. These same positions can also be “in the money” if they become more valuable in comparison to similar positions, contracts or resources obtainable at present market prices. This valuation methodology is commonly referred to as “Mark to Market.” If MCE is “out of the money” on a substantial portion of its contracts, it may have to charge higher retail rates. This may erode MCE’s competitive position and market share if other market participants (e.g., Direct Access providers or PG&E) are able to procure power at a lower cost and offer lower retail electricity rates.

A subcomponent of market price risk is market liquidity. Illiquid markets make it more difficult to buy or sell a commodity and can result in higher premiums on purchases or deeper discounts on sales.

Another dimension of market price risk is congestion risk. Congestion risks arise from the difference between the prices MCE pays the CAISO to schedule its load and the prices MCE receives from the CAISO for energy delivered by MCE’s suppliers.

4.2 Counterparty Credit and Performance Risk

Performance and credit risk refers to the inability or unwillingness of a counter party to perform according to its contractual obligations. Failure to perform may arise if an energy supplier fails to deliver energy as agreed. There are four general performance and credit risk scenarios:

[1] counterparties and wholesale suppliers may fail to deliver energy or environmental attributes, requiring MCE to purchase replacement product elsewhere, possibly at a higher cost;

[2] counterparties may fail to take delivery of energy or environmental attributes sold to them, necessitating a quick resale of the product elsewhere, possibly at a lower price;

[3] counterparties may fail to pay for energy or environmental attributes delivered; and

[4] counterparties and suppliers may refuse to extend credit to MCE, possibly resulting in higher collateral posting costs impacting MCE's cash and bank lines of credit.

An important subcategory of credit risk is concentration risk. When a portfolio of positions and resources is concentrated in one or a very few counterparties, sources, or locations, it becomes more likely that major losses will be sustained in the event of non-performance by a counterparty or supplier or as a result of price fluctuations at one location.

4.3 Load and Generation Volumetric Risk

Energy deliveries must be planned for based upon forecasted load adjusted for distribution line losses. MCE forecasts load over the long and short term and enters into long and short term fixed price energy contracts to hedge its load consistent with the provisions of its IRP.

Load forecasting risks arises from inaccurate load forecasts and can result in the over or under procurement of energy and/or revenues that deviate from approved budgets. Energy delivery risk occurs if a generator fails to deliver expected or forecast energy. Variations in wind speed and cloud cover can also impact the amount of electricity generated by solar and wind resources, and occasional oversupply of power on the grid can lead to curtailment of energy deliveries or reduce revenue as a result of low or negative prices at energy delivery points. Weather is an important variable that can result in higher or lower electricity usage due to heating and cooling needs.

In the CAISO markets this situation can result in both over supply and undersupply of electricity relative to MCE's load and the over or under scheduling of generation or load into the day ahead market relative to actual energy consumed or delivered in the real time market. Load and generation volumetric risk may result in unanticipated open positions and imbalance energy costs. Imbalance energy costs result from differences in the price or volume of generation or load scheduled into the day ahead market when compared to the price or volume of generation or load occurring in the real time market during that time period.

4.4 Operational Risk

Operational risk consists of the potential for failure to act effectively to plan, execute and control business activities. Operational risk includes the potential for:

[1] organizational structure that is ineffective in addressing risk, i.e., the lack of sufficient authority to make and execute decisions, inadequate supervision, ineffective internal checks and balances, incomplete, inaccurate and untimely forecasts or reporting, failure to separate incompatible functions, etc.;

[2] absence, shortage or loss of key personnel or lack of cross functional training;

[3] lack or failure of facilities, equipment, systems and tools such as computers, software, communications links and data services;

[4] exposure to litigation or sanctions resulting from violating laws and regulations, not meeting contractual obligations, failure to address legal issues and/or receive competent legal advice, not drafting and analyzing contracts effectively, etc.; and

[5] errors or omissions in the conduct of business, including failure to execute transactions, violation of guidelines and directives, etc.

4.5 Liquidity Risk

Liquidity Risk is the risk that MCE will be unable to meet its financial obligations. This can be caused by unexpected financial events and/or inaccurate pro forma calculations, rate analysis, and debt analysis. Some unexpected financial events impacting liquidity could include:

[1] breach of MCE credit covenants or thresholds; MCE has credit covenants included in its banking and several short-term energy contracts. Breach of credit covenants or thresholds could result in the withdrawal of MCE's line of credit or trigger the requirement to post collateral; and

[2] from time to time MCE may be the subject of legal or other claims arising from the normal course of business. Payment of a claim by MCE could reduce MCE's liquidity if the cause of loss is not covered by MCE's insurance policies.

4.6 Regulatory/Legislative Risk

Regulatory risk encompasses market structure and operational risks associated with shifting state and federal regulatory policies, rules, and regulations that could negatively impact MCE. An example is the potential increase of exit fees for customers served by Community Choice Aggregators such as MCE that would result in higher electricity rates for MCE's customers.

Legislative risk is associated with actions by federal and state legislative bodies, such as any adverse changes or requirements that may infringe on MCE's autonomy, increase its costs, or otherwise negatively impact MCE's ability to fulfill its mission.

5.0 Internal Control Principles

Internal controls shall be based on proven principles that meet or exceed the requirements of financial institutions and credit rating agencies and good utility practice. The required controls shall include all customary and usual business practices designed to prevent errors and improprieties, ensure accurate and timely reporting of results of operations and information pertinent to management, and facilitate attainment of business objectives. These controls are currently and shall remain fully integrated into all activities of the business and shall be consistent with stated objectives. There shall be active participation by senior management in risk management processes.

The required controls include the following:

[1] Segregation of duties and functions between front, middle, and back office activities. Generally:

- Front office is responsible for planning (e.g. preparation of the IRP and procurement planning) and procurement (e.g. solicitation management, contract negotiation, structuring and pricing, contract execution) and contract management and compliance;
- Mid office is responsible for controls and reporting (e.g., risk monitoring, risk measurement, risk reporting, procurement compliance, counterparty credit review, approval and monitoring); and
- Back office is responsible for settlements and processing (e.g., verification, validation, reconciliation and analysis of transactions, tracking, processing, and settlements of transactions).

[2] Delegation of authority that is commensurate with responsibility and capability, and relevant training to ensure adequate knowledge to operate in and comply with rules associated with the markets in which they transact (e.g., CAISO). Contract origination, commercial approval, legal review, invoice validation, and transaction auditing shall be performed by separate staff or contractor for any single transaction. No single staff member shall perform all these functions on any transaction.

[3] Defining authorized products and transactions. Generally:

- Authorized transactions are those transactions directly related to the procurement and/or administration of electric energy, reserve capacity, transmission and distribution service, ancillary services, congestion revenue rights (CRRs), renewable energy, renewable energy credits, scheduling activities, tolling agreements, and bilateral purchases of energy products. All transactions must be consistent with this Policy and the board approved IRP.
- Prohibited transactions are those transactions that are not related to serving retail electric load and/or reducing financial exposure. Speculative buying and selling of energy products is prohibited. Speculation is defined as buying energy in excess of forecasted load plus reasonable planning reserves or selling energy or environmental attributes that are not yet owned by MCE. In no event shall speculative transactions be permitted. Any financial derivatives transaction including, but not limited to futures, swaps, options, and swaptions are also prohibited.

[4] Defining procurement authority as set forth in MCE's Board Resolution on Delegating Energy Procurement Authorities.

[5] Defining proper process for executing power supply contracts. Generally, MCE will ensure power supply contracts are approved by personnel from Procurement/Commercial, Technical, and Credit/Financial prior to execution. Legal review will be required of various forms of agreement. Forms of agreement will be reviewed no less than every six months.

[6] Complete and precise capture of transaction and other data, with standardization of electronic and hard copy documentation.

[7] Meaningful summarization and accurate reporting of transactions and other activity at regular intervals.

[8] Timely and accurate risk and performance measurement at regular intervals.

[9] Regular compliance review to ensure that this Policy and related risk management guidelines are adhered to, with specific guidelines for resolving instances of noncompliance.

[10] Active participation by senior management in risk management processes.

6.0 Risk Management Business Practices

6.1 Risk Measurement Metrics and Reporting

A vital element of this Policy is the regular identification, measurement and communication of risk. To effectively communicate risk, all risk management activities must be monitored on a frequent basis using risk measurement methodologies that quantify the risks associated with MCE's procurement-related business activities and performance relative to goals.

MCE measures and updates its risks using a variety of tools that model programmatic financial projections, market exposure and risk metrics, as well as through short term budget updates. The following items are measured, monitored, and reported:

[1] Mark-to-Market Valuation – marking to market is the process of determining the current value of contracted supply. A mark-to-market valuation shall be performed at least on a quarterly basis.

[2] Exposure Reporting – calculates the notional dollar risk exposure of open portfolio positions at current market prices. The exposure risk calculation shall be performed at least on a quarterly basis.

[3] Open Position Monitoring – on a monthly basis, MCE shall calculate/monitor its open positions for all energy and capacity products. If energy open positions for the prompt month exceed 10% of load, MCE will solicit market prices to close open positions and make a commercial decision to close the position. Open positions for terms beyond the prompt month will be monitored monthly and addressed in accordance with MCE's Load and Resource Balance Planning Model (Planning Model) and the IRP.

[4] Reserve Requirement Targets – on an annual basis, MCE staff will monitor MCE's reserves to ensure that they meet the targeted thresholds.

Consistent with the above, the Middle Office will develop reports and provide feedback to the Risk Oversight Committee.

Risk measurement methodologies shall be re-evaluated on a periodic basis to ensure MCE adjusts its methods to reflect the evolving competitive landscape.

6.2 Market Price Risk

MCE manages market price risk using its Load and Resource Balance which defines forecasted load, energy under contract and MCE's open positions in various energy product types including renewable energy (Product Content Category I, II and III), carbon free energy, system power, and MCE's procurement targets.

MCE determines the quantity of energy it will contract for in each year using its Planning Model. The Planning Model includes an outline of the delivery term and quantity of energy by product type for which MCE will seek to contract in the upcoming year. The Planning Model informs MCE's solicitation planning including solicitation timing and strategy, and person or team responsible for the solicitation.

In general MCE will seek to purchase roughly equal portions of long term renewable energy in each year in order to diversify exposure to market conditions and reduce the risk of concentrating purchases in any one year.

For products generally purchased through short and medium-term contracts MCE follows a similar strategy of diversifying contracting over the delivery horizon.

As predominantly a net buyer, MCE manages its market liquidity risk through purchasing at different intervals as described in the Planning Model and maintaining a diverse set of counterparties to transact with.

Congestion risk is managed through the contracting process with a preference for day ahead scheduling and energy delivery at the NP 15 trading hub and through resource assessment and selection. Once energy is procured MCE manages congestion risks through the prudent management of Congestion Revenue Rights (CRRs) consistent with its Congestions Revenue Rights Risk Management Guidelines. CRRs are financial instruments used to hedge against transmission congestion costs encountered in the CAISO day-ahead market. MCE uses a third-party scheduling coordinator to manage its CRR portfolio. MCE uses CRRs to reduce its exposure to congestion and other CAISO charges, and will not use CRRs for speculative purposes.

6.3 Counter Party Credit and Performance Risk

MCE evaluates and monitors the financial strength of service and energy providers consistent with MCE's Credit Guidelines. Generally, MCE manages its exposure to energy suppliers through a preference for counter parties with Investment Grade Credit ratings as determined by Moody's or Standard and Poor's and through the use of security requirements in the form of cash and letters of credit. MCE measures its mark-to-market counter party credit exposure consistent with industry best practices.

6.4 Load and Generation Volumetric Risk

MCE manages energy delivery risks by ensuring that contracts include appropriate contractual penalties for non-delivery, acquiring energy from a geographically and technologically diverse portfolio of

generating assets with a range of generation profiles. In order to ensure energy product targets are achieved, MCE uses 80 to 100 percent of the generator's average annual expected energy for certain variable or as available resources for operating year load and resource planning.

MCE manages load forecasting and related weather risks by contracting with qualified data management and scheduling coordinators who together provide the systems and data necessary to forecast and schedule load using good utility practice.

MCE's load scheduling strategy, as executed by its scheduling coordinator, is captured in its Load Bidding/Scheduling Guidelines. The strategy ensures that price risk in the day ahead and real time CAISO markets is managed effectively and is consistent with good utility practice.

6.5 Operational Risk

Operational risks are managed through:

- Adherence to this Policy and oversight of procurement activity;
- Conformity to Human Resources Policies and Guidelines;
- Staff resources, expertise and/or training reinforcing a culture of compliance;
- Ongoing and timely internal and external audits; and
- Cross-training amongst staff

6.6 Liquidity Risk

MCE manages liquidity risk through adherence to its loan and power purchase agreement credit covenants, limiting commitments to provide security consistent with its Credit Guidelines, ensuring it has adequate loan facilities, prudent cash and investment management, and adherence to its Reserve Policy. MCE monitors its liquidity (defined as unrestricted cash, investments and unused bank lines of credit) no less than weekly. MCE utilizes scenario and sensitivity analyses while preparing budget, rate, and pro forma analyses in order to identify potential financial outcomes and ensure sufficient liquidity under adverse conditions.

6.7 Regulatory/Legislative Risk

MCE manages its regulatory and legislative risk through active participation in working groups and advocacy coalitions such as the California Community Choice Association. MCE regularly participates in regulatory rulemaking proceedings and legislative affairs to protect MCE's interests.

7.0 Risk Management Policy Governance

7.1 MCE Board of Directors

The MCE Board or its delegated subcommittee is responsible for adopting this Policy and reviewing it as needed every two calendar years. The Board also approves MCE's annual budget, contracting authorities and delegate responsibilities for the management of MCE's operations to its CEO and Staff.

7.2 Technical Committee

The Technical Committee is responsible for approval of substantive changes to this Policy as needed every two calendar years. The Technical Committee is responsible for reviewing and approving the Integrated Resource Plan every year, and energy service and supply contracts consistent with MCE Board Resolutions describing contracting authorities.

7.3 Risk Oversight Committee (ROC)

The ROC shall include the following voting members: Chief Executive Officer (CEO), Chief Operating Officer (COO), General Counsel, and Finance Manager, or their designees in case of their absence. The Director of Power Resources and Technical Procurement Advisor shall be non-voting members of the ROC. The CEO shall act as the chair of the ROC.

The ROC shall meet once per calendar quarter, or as otherwise called to order by the CEO. The Finance Manager shall make reports and seek approval for any substantive changes to this Policy from the Technical Committee.

The ROC shall from time to time adopt and bring current risk management guidelines defining in detail the internal controls, strategies and processes for managing market risks incurred through or attendant upon wholesale trading, retail marketing, long-term contracting, CRR trading and load and generation scheduling. The ROC shall specify the categories of transactions permitted and set risk limits for wholesale trading. The ROC shall receive and review information and reports regarding risk management, wholesale trading transactions, the administration of supply contracts.

The ROC shall have direct responsibility for enforcing compliance with this Policy. Any gross violations to this Policy, as determined by the Chair of the ROC, shall be reported to the Technical Committee for appropriate action.



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Valley Electric Authority ERMP





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**Valley Clean Energy Alliance
Enterprise Risk Management Policy**

Adopted: _____

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1 Introduction

1.1 Background and Purpose

Valley Clean Energy Alliance (VCEA) is implementing an Enterprise Risk Management (ERM) program to provide a structured, disciplined, and consistent approach to risk management that facilitates risk-informed decision making throughout the organization. ERM supports VCEA in aligning strategy, processes, people, and technology for the purpose of evaluating and managing uncertainties in executing its mission. By strategically managing risk, VCEA can proactively reduce the chance of loss, identify and take advantage of opportunities, create greater financial stability, and protect its resources to support its mission and create value for its members.

This policy has been established to ensure appropriate identification and evaluation of risks associated with all VCEA activities, and to ensure that these risks are managed to an acceptable level.

1.2 Enterprise Risk Management Objective

This ERM Policy (Policy) establishes VCEA's ERM Program (Program) and ensures that risk management assessments and decisions are based on a consistent approach and a common language.

The objective of the Policy is to provide a framework for identifying, assessing, responding to, managing, and communicating risks and opportunities to help VCEA achieve its objectives. The framework provides the means to embed risk management as a core competency in VCEA operations, enabling it to apply consistent risk management practices at both the enterprise-wide level and within each program in a way that facilitates risk-informed decision making at all levels.

The ERM objectives are to:

- Provide the VCEA Board with transparency and insight into risks that could impact the ability to execute VCEA's mission.
- Implement well-defined risk management process, tools and techniques.
- Identify current and emerging risks, and prioritize and develop response plans when necessary.
- Increase the likelihood of success in achieving the VCEA's objectives.
- Build credibility and sustain confidence in VCEA's governance by all stakeholders including private, federal, state, and local partners.
- Improve the understanding of interactions and relationships between risks.
- Establish clear accountability and ownership of risk.
- Develop the capacity for continuous monitoring and periodic reporting of risks.

1.3 Statement of Risk Policy and Risk Appetite

VCEA's approach is to conservatively manage its exposure to financial, legal, compliance and regulatory, operational, strategic, and reputational impacts while accepting and balancing risk taking in pursuit of its mission and objectives. It recognizes that its appetite for risk varies according to the activity undertaken, that acceptance of risk is subject to ensuring that potential benefits and risks are fully understood before taking action, and that sensible measures to mitigate risk are established.

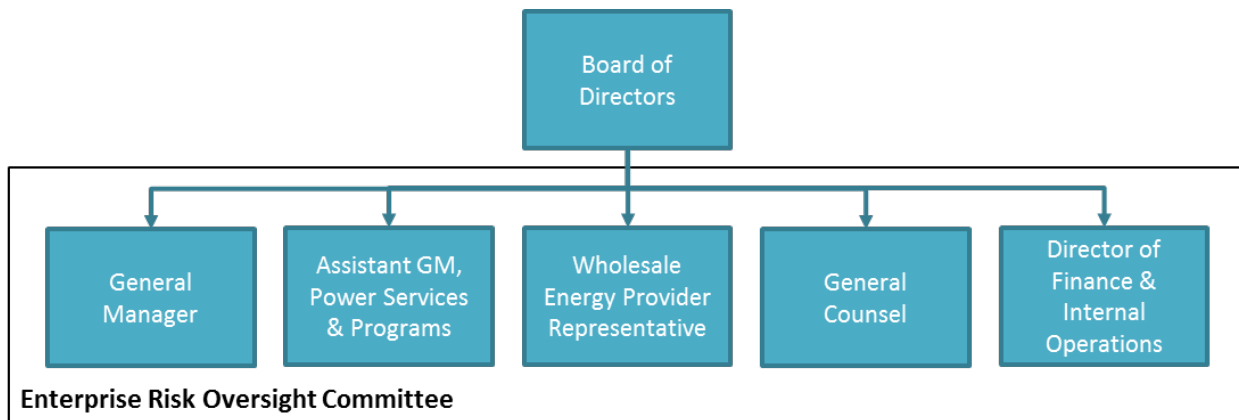
1.4 Policy Administration

The Board must approve amendments to this Policy.

2 ERM Roles and Responsibilities

2.1 Enterprise Risk Management Organizational Structure

Please refer to the Wholesale Power Procurement & Risk Management Policy, Section 3 for the ERM Risk Management Structure.



2.2 Enterprise Risk Oversight Committee (EROC)

In addition to the EROC roles as outlined in Section 3 of the Wholesale Power Procurement & Risk Management Policy, the EROC is also responsible for overseeing the development and implementation of processes used to analyze, prioritize, and address risks across VCEA. The EROC is responsible for establishing risk appetite and risk tolerance levels to ensure that risks are managed to create value for VCEA members in a manner which is consistent with this policy.

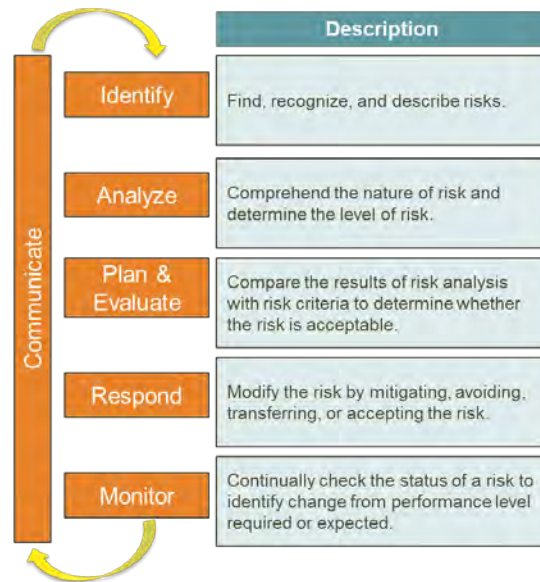
In addition to the authorities outlined in Section 3 of the Wholesale Power Procurement & Risk Management Policy, the EROC maintains the additional authority and responsibility to:

- Work with the Board to develop and establish a list of high priority enterprise risks that will be monitored on an ongoing basis;
- Approve ERM processes and risk appetite and risk tolerance guidelines;
- Receive and review ERM reports as described in this Policy;
- Conduct and coordinate any actions identified as risk mitigation for the management of specific enterprise risks;
- Maintain this Policy; and
- Perform any other activities consistent with this policy and governing laws that VCEA's Board determines are necessary or appropriate.

The Director of Finance & Internal Operations is the staff person that will own the ERM process.

3 Business Practices

To develop a better understand of risks, a formal risk management process will be used (see diagram below).



At each stage of the risk management process, tools and/or techniques appropriate to VCEA's objectives, resources and capabilities shall be used. The Portfolio Manager shall recommend appropriate tools for proper risk identification, assessment and management.

3.1 Identify

The process begins with the identification of risks to the enterprise. Initially a set of risks will be identified through the use of surveys and staff brainstorming sessions. In the course of normal business operations, internal and external risks that could impact VCEA's achievement of set objectives are identified at various points in the business cycle. During strategic/business planning, the Portfolio Manager will help facilitate risk based conversations to help identify risks to the organization's objectives. Throughout the year, risk assessments, scans and/or surveys are performed where appropriate. VCEA risk management staff review the output from internal monitoring and assurance activities to identify gaps and emerging risk areas.

3.2 Analyze

After potential risks have been identified, risks are analyzed, considering likelihood, velocity (timeframe over which a risk could materialize) and impact to VCEA of a given outcome. While much of the risk assessment and analysis may be subjective, where appropriate, tolerance levels are adopted to serve as a guide for managing risks.

3.3 Plan & Evaluate

Based on the outcomes of the Analyze phase, this phase is intended to assist in making decisions about which risks need to be further mitigated and to set the priority for the implementation. During this phase, the results of the risk assessments are compared with the agreed upon risk tolerance levels to determine whether the current level of exposure is acceptable. In addition to consideration of the risk analysis, Staff will consider strategic options that balance the cost of risk mitigation strategy implementation against the benefits to be derived.

3.4 Respond

Risk response is the process of implementing the mitigation identified in the Plan & Evaluate phase. From the strategies laid out during the Plan & Evaluate phase, actions that can be taken to either get ahead of events in order to avoid exposure to the risk, or to respond to events in order to mitigate the impact of such risk are identified. The process ensures that each risk requiring a response has an owner monitoring the response. When considering the response methodology, it is important to recognize the impacts of the decision as well as the capabilities of the organization to implement and maintain the response. Where appropriate, metrics will be established and/or adopted to help serve as early warning signals.

3.5 Monitor

Staff will be responsible for monitoring and measuring risk mitigation recommendations, risk trends and metrics to ensure the cost-effectiveness of the controls and introduce improvements when appropriate. Staff is responsible for reporting to the EROC and to the Board on the status of high priority enterprise risks.

4 Management Reporting and Metrics

The Portfolio Manager will assist the Director of Finance & Internal Operations in working with the EROC to establish an appropriate reporting format and metrics for VCEA staff to use in reporting enterprise risks to the EROC and the Board. The reports will show metrics, status and additional mitigations where appropriate. Emerging risk evaluation and discussion will be integrated into the reporting and monitoring process. In addition to risk-specific reporting, consolidated summary reporting on the status of all high priority enterprise risks will be reported out as follows:

- **Quarterly Report to EROC**

Staff will report quarterly to the EROC on the status of enterprise risks.

- **Semi-Annual Report to Board**

Staff will report semi-annually to the Board on the status of enterprise risks.



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SECURING YOUR COMMUNITY'S ENERGY FUTURE

Monterey Bay Community Energy ERMP





Energy Risk Management Policy

February 7, 2018 – MBCP Operations Board Approved

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Section 1: POLICY OVERVIEW

1.1 Background and Purpose

The Monterey Bay Community Power (“MBCP”) is a public joint powers agency located within the geographic boundaries of Monterey, Santa Cruz and San Benito Counties. Member agencies of MBCP include the Counties of Monterey, Santa Cruz and San Benito, and sixteen (16) incorporated cities located within the three counties. Presently, MBCP’s CCA Members include the following local government entities:

County of Santa Cruz	County of Monterey	County of San Benito
City of Santa Cruz	City of Salinas	City Hollister
City of Watsonville	City of Monterey	City of San Juan Bautista
City of Capitola	City of Pacific Grove	
City of Scotts Valley	City of Carmel	
	City of Seaside	
	City of Marina	
	Sand City	
	Soledad	
	Greenfield	
	Gonzales	

MBCP members desire to implement and administer a community choice aggregation (“CCA”) program for members that elect to become participants. The CCA program will give its members an opportunity to procure electricity supplies and implement local programs that meet the goals of the local communities. Electricity procured to serve customers will continue to be delivered over PG&E’s transmission and distribution system.

Providing retail electric generation service to customers enrolled in the CCA program exposes MBCP to risks such as customer opt-out risk, market risk, regulatory risk, volumetric risk, model risk, operational risk, counterparty credit risk and reputation risk.

This Energy Risk Management Policy (“Policy”) establishes MBCP’s Energy Risk Management Program (“Program”) including risk management functions and procedures to manage the risks associated with power procurement activities.

The ultimate purpose of this Policy is to help MBCP manage its risks by specifying management responsibilities, organizational structures, risk management standards, and operating controls and limits necessary to properly identify and manage MBCP's exposure to risk.

1.2 Scope

Unless otherwise explicitly stated in this Policy, or other policies approved by the Board, this Policy applies to all power procurement and related business activities that may impact the risk profile of MBCP. This Policy documents the framework by which management and staff will:

- Identify and quantify risk
- Develop and execute procurement strategies
- Create a framework of controls and oversight
- Monitor, measure and report on the effectiveness of the Program

1.3 Energy Risk Management Objective

The objective of the Energy Risk Management Policy is to provide a framework for conducting procurement activities that will manage risks to support MBCP meeting the goals listed in Section 2.1.

Pursuant to this Policy, MBCP will identify and measure the magnitude of the risks to which it is exposed and that contribute to the potential for not meeting identified goals.

1.4 Policy Administration

This Policy document shall be routinely reviewed and approved by the MBCP Operations Board of Directors ("Board"). The Risk Management Committee ("RMC") and Operations Board must approve amendments to this Policy, except for the appendices, which may be amended with approval of only the RMC. The RMC must give notice to the Board of any amendment it makes to an appendix or a reference policy or procedure document.

Section 2: GOALS AND RISK EXPOSURES

2.1 Policy Goals

To help ensure long term viability for the CCA, MBCP has outlined the following Policy Goals. MBCP will establish metrics for modeling and measuring risk exposures of the CCA and for tracking performance relative to these goals.

- MBCP will target to maintain competitive retail rates with PG&E after adjusting for the PCIA and Franchise Fee.
- MBCP will strive to obtain electricity from sources with minimum carbon emissions
- MBCP will fund financial reserves with the following objectives:
 - Establish long-term business sustainability
 - Build collateral for power procurement activities
 - Establish an investment grade credit rating
 - Develop a source of funds for investment in generation and other local programs
 - Stabilize rates and dampen year-to-year variability in procurement costs

The goals outlined above are incorporated into the financial models that are used in modeling and measuring risk exposures. It is important to note that the goals listed above are not intended to be a comprehensive list of goals for the CCA. Rather, the above reflect a subset of program goals that are critical to long-term business viability for the CCA.

2.2 Risk Exposures

The Program faces a range of risks during launch and ongoing operation:

- Customer Opt-Out risk
- Market risk
- Regulatory risk
- Volumetric risk
- Model risk
- Operational risk
- Counterparty credit risk
- Reputation risk

Customer Opt-Out Risk

Customer opt-out risk is the primary risk the CCA faces. Customer opt-out risk includes any condition or event that creates the potential for significant reductions in the CCA's customer base, thereby increasing the potential for the CCA to not meet its Policy goals. A CCA faces other risks, but the ultimate concern is often how these other risks will affect customer opt-outs. This Policy addresses this paramount risk and secondary risk types listed below. These risks are not all inclusive but are identified as the risk factors driving the success of the CCA.

The most relevant measures of the success of this Policy include:

- Retail rate competitiveness with PG&E
- Financial reserve level

For this Policy, risk exposure is assessed on all the transactions (energy, environmental attributes, capacity, etc.) executed by MBCP, as well as the risk exposure of open positions and the impacts of these uncertainties on the CCA's load obligations. The following are components of MBCP's energy risk that will be assessed, monitored and managed.

2.3.1 Market Risk

Market risk is the uncertainty of MBCP's financial performance due to variable commodity market prices (market price risk) and uncertain price relationships (basis risk). Variability in market prices creates uncertainty in MBCP's procurement costs and can materially impact MBCP's financial position. Market risk is managed by regular measurement, an active hedging program, execution of approved procurement and Congestion Revenue Right strategies and the limit structure set forth in this Policy.

2.3.2 Regulatory Risk

CCAs remain a comparatively new legal entity in the state of California and are subject to an evolving legal and regulatory landscape. Additionally, CCA's are in direct competition with California's Investor Owned Utilities ("IOUs"), which face the risk of stranded investments in generating assets and power purchase agreements procured in the past to serve now departing CCA loads. The manner in which the stranded costs of these legacy power supplies is allocated to departing CCA loads is the subject of regulatory proceedings at the CPUC. The competitive and regulatory landscape results in retail rate competitiveness risks that are unique to CCAs. MBCP will manage regulatory risk by:

- Regular monitoring and analysis of legislative and regulatory proceedings impacting CCAs;
- Regular monitoring and reporting of actual and projected financial results including stressed financial results assuming a range of market and retail rate scenarios (both MBCP and PG&E);
- Structuring procurement strategies with the objective function of maintaining a favorable retail rate savings relative to PG&E;
- Actively participating in and representing CCA customer interests during regulatory and legislative proceedings.

2.3.3 Volumetric Risk

Volumetric risk is the uncertainty of MBCP's financial performance due to variability in the quantity of retail load served by MBCP. Retail load uncertainty results from customer opt-outs, temperature deviation from normal, unforeseen adoption of behind the meter generation by MBCP customers, as well as local, state and national economic conditions. Volume risk is managed by taking steps to:

- Quantify anticipated PG&E generation and PCIA rates, and variability therein;
- Quantify variability in procurement costs;
- Monitor and adjust for non-regulatory factors driving volumetric uncertainty (e.g. weather);

- Adopt a formal procurement strategy;
- Implement a key accounts program and maintain strong relationships with the local community;
- Monitor trends in customer onsite generation, economic shifts, and other factors that affect electricity customer volume and composition;
- Expand the customer base of the CCA, including seeking to add direct access loads.

2.3.4 Model Risk

Model risk is the uncertainty of MBCP's financial performance due to potentially inaccurate or incomplete characterization of a transaction or power supply portfolio elements due to fundamental deficiencies in models and/or information systems. Model risk is managed by:

- MBCP Risk Management Committee approval of financial and risk models;
- Ongoing review of model outputs as part of controls framework;
- Ongoing MBCP staff education and participation in CCA industry forums;
- Ongoing update and improvement of models as additional information and expertise is acquired

2.3.5 Operational Risk

Operational risk is the uncertainty of MBCP's financial performance due to weaknesses in the quality, scope, content, or execution of human resources, technical resources, and/or operating procedures within MBCP. Operational risk can also be exacerbated by fraudulent actions by employees or third parties or inadequate or ineffective controls. Operational risk is managed through:

- The controls set forth in this Policy
- RMC oversight of procurement activity
- Timely and effective management reporting
- Staff resources, expertise and/or training reinforcing a culture of compliance
- Ongoing and timely internal and external audits

2.3.6 Counterparty Credit Risk

Counterparty credit risk is the potential that a Counterparty will fail to perform or meet its obligations in accordance with terms agreed to under contract. MBCP's exposure to counterparty credit risk is controlled by the limit controls set forth in the Credit Policy described in Section 6.

2.3.7 Reputation Risk

Reputation risk is the potential that the CCA's reputation is harmed, causing customers to opt-out of the CCA's service and return to PG&E. Reputational risk is managed through:

- Implementation and adherence to this Energy Risk Management Policy
- Establishment and adherence to industry best practices including both those adopted by other CCAs, as well as those adopted by traditional municipal electric utilities.

2.4 Risk Measurement Methodology

A vital element in MBCP's Energy Risk Management Policy is the regular identification, measurement and communication of risk. To effectively communicate risk, all risk management activities must be monitored on a frequent basis using risk measurement methodologies that quantify the risks associated with MBCP's procurement-related business activities and performance relative to goals.

Risk measurement of MBCP's position will be performed using a method that calculates projected procurement costs on an annual basis and that further provides a comparison of projected MBCP retail rates to those of PG&E under expected and stressed scenarios. The rate comparison will be adjusted for actual and projected PCIA and Franchise Fee charges. Risk measurement methodologies shall be re-evaluated on a periodic basis to ensure MBCP adjusts its methods to reflect the evolving regulatory and competitive landscape. The implementation of these methods shall be overseen and ratified by the RMC.

Section 3: BUSINESS PRACTICES

3.1 General Conduct

It is the policy of MBCP that all personnel, including the Board, management, and agents, adhere to standards of integrity, ethics, conflicts of interest, compliance with statutory law and regulations and other applicable MBCP standards of personal conduct while employed by or affiliated with MBCP.

3.2 Trading for Personal Accounts

All MBCP Directors, management, employees and agents participating in any transaction or activity within the coverage of this Policy are obligated to give notice in writing to MBCP of any interest such person has in any counterparty that seeks to do business with MBCP, and to identify any real or potential conflict of interest such person has or may have regarding any contract or transaction with MBCP.

If there is any doubt as to whether a prohibited condition exists, then it is the employee's responsibility to discuss the possible prohibited condition with her/his manager or supervisor.

3.3 Adherence to Statutory Requirements

Compliance is required with rules promulgated by the state of California, California Public Utilities Commission, California Energy Commission, Federal Energy Regulatory Commission (FERC), Commodity Futures Trading Commission (CFTC), and other regulatory agencies.

Congress, FERC and CFTC have enacted laws, regulations and rules that prohibit, among other things, any action or course of conduct that actually or potentially operates as a fraud or deceit upon any person in connection with the purchase or sale of electric energy or transmission services. These laws also prohibit any person or entity from making any untrue statement of fact or omitting to state a material fact where the omission would make a statement misleading. Violation of these laws can lead to both civil and criminal actions against the individual involved, as well as MBCP. This Policy is intended to comply with these laws, regulations and rules and to avoid improper conduct on the part of anyone employed by MBCP. These procedures may be modified from time to time by legal requirements, auditor recommendations, RMC requests and other considerations.

In the event of an investigation or inquiry by a regulatory agency, MBCP will provide legal counsel to employees. However, MBCP will not appoint legal counsel to an employee if MBCP's General Counsel and Chief Executive Officer determine that the employee was not acting in good faith within the scope of employment.

MBCP employees are prohibited from working for another power supplier, CCA or utility in a related position while they are simultaneously employed by MBCP unless an exception is authorized by the Board. For clarity, this prohibition is not intended to prevent MBCP staff from performing non-CCA activities on behalf MBCP in the normal course of its business.

3.4 Transaction Type, Regions and Markets

Authorized transaction types, regions and markets are listed in Appendix B to this Policy. These transaction types, regions and markets are and shall continue to be focused on supporting MBCP's

financial policies, including approved procurement strategies. New or non-standard transaction types may provide MBCP with additional flexibility and opportunity but may also introduce new risks. Therefore, transaction types, regions and markets not included in Appendix B, or transactions within already approved transaction types that are substantially different from any prior transaction executed by MBCP, must be approved by the RMC prior to execution using the process defined below.

When seeking approval for a new or non-standard transaction type, region, and/or market, a New Transaction Approval Form, as shown in Appendix C, should be drafted describing all significant elements of the proposed transaction. The proposal write-up should, at a minimum, include:

- A description of the benefit to MBCP, including the purpose, function and expected impact on costs (i.e.; decrease costs, manage volatility, control variances, etc.);
- Identification of the in-house or external expertise that will manage and support the new or non-standard transaction type;
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues;
- How the exposures to the risks above will be managed by the limit structure;
- Proposed valuation methodology (including pricing model, where appropriate);
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new transaction type;
- Proposed accounting methodology;
- Proposed work flows/methodology (including systems).

It is the responsibility of MBCP's CEO or his designee to ensure that relevant departments have reviewed the proposed transaction and that material issues are resolved prior to submittal to the RMC for approval. If approved, Appendix B to the Policy will be updated to reflect the new transaction type.

3.5 Counterparty Suitability

MBCP's counterparty credit limits and approval processes will govern counterparty suitability for all transactions executed by MBCP, consistent with the credit policies described in Section 6. Credit limits should be approved prior to execution of contracts.

3.6 System of Record

MBCP will maintain a set of records for all transactions executed in association with MBCP procurement activities. The records will be maintained in US dollars and transactions will be separately recorded and categorized by type of transaction. This system of record shall be auditable.

3.7 Transaction Valuation

Transaction valuation and reporting of positions shall be based on objective, market-observed prices. Open positions should be valued (marked-to-market) daily, based on consistent valuation methods and data sources. Whenever possible, mark-to-market valuations should be based on independent, publicly available market information and data sources.

3.8 Stress Testing

In addition to limiting and measuring risk using the methods described herein, stress testing shall also be used to examine performance of the MBCP portfolio under adverse conditions. Stress testing is used to understand the potential variability in MBCP's projected procurement costs, and resulting retail rate impacts and competitive positioning, associated with low probability events.

3.9 Trading Practices

It is the expressed intent of this Policy to prohibit the acquisition of risk beyond that encountered in the efficient optimization of MBCP's generation portfolio and execution of procurement strategies. As such, speculative transactions are prohibited. During developing operating plans and conducting procurement activities, MBCP recognizes that expertise must be employed by staff, and it is not the intent of this Policy to restrain the legitimate application of analysis and market expertise in executing procurement strategies intended to minimize costs within the constraints of this Policy. If any questions arise as to whether a transaction constitutes speculation, the RMC shall review the transaction(s) to determine whether the transaction would constitute speculation and document its finding in the meeting minutes.

3.10 Policy Compliance

MBCP's Director of Internal Operations will provide a monthly report monitoring compliance with the limits established by this Policy.

Section 4: ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES

4.1 Risk Management Organizational Structure

MBCP's Energy Risk Management Policy ensures appropriate segregation of responsibility for policy approval, valuation and reporting, and trading.

4.2 Operations Board of Directors

The MBCP Operations Board of Directors has the responsibility to review and approve this Policy. With this approval, the Board assumes responsibility for understanding the risks MBCP is exposed to due to CCA Program activity and how the policies outlined in this document help MBCP manage the associated risks. The Board of Directors is also responsible to:

- Determine MBCP strategic direction
- Understand the procurement strategy employed
- Approve risk exposures beyond the RMC's authority

4.3 Risk Management Committee (RMC)

The RMC is formed by the MBCP CEO to implement, maintain and oversee compliance of MBCP with this Policy. The members of the RMC shall be selected by the MBCP's CEO.

The Chief Executive Officer will serve as the RMC Chairperson. The primary goal of the RMC is to ensure that the procurement activities of MBCP are executed within the guidelines of this Policy and are consistent with Board directives. The RMC is also responsible to consider and propose recommendations to this Policy when conditions dictate.

Pursuant to direction from the Operations Board of Directors and the limitations specified by this Policy, the RMC and the Chief Executive Officer maintain full authority over all procurement activities for MBCP. This authority includes, but is not limited to, taking any or all actions necessary to ensure compliance with this Policy.

The RMC is responsible for overseeing implementation of this Policy, procurement strategies, and the adoption of new product types. The RMC is also responsible for ensuring procurement strategies are consistent with MBCP's strategic objectives and for reviewing financial results.

The RMC maintains the authority and responsibility to:

- Approve and ensure that all procurement strategies are consistent with this Policy;
- Determine if changes in procurement strategies are warranted;
- Approve new transaction types, regions, markets and delivery points;
- Understand financial and risk models;
- Understand counterparty credit review models and methods for setting and monitoring credit limits;
- Receive and review reports as described in this Policy;
- Meet to review actual and projected financial results and potential risks;

- Escalate to the Board of Directors with any risks beyond the RMC's authority;
- Review summaries of limit violations;
- Review the effectiveness of MBCP's energy risk measurement methods;
- Maintain this Policy; and
- Monitor regulatory and legislative activities.

4.4 Segregation of Duties

MBCP shall maintain a segregation of duties, also referred to as "separation of function", to the extent practicable to help manage and control the risks outlined in this Policy. Individuals responsible for legally binding the CCA to a transaction will not also perform confirmation, clearing or settlement functions. MBCP staff roles and responsibilities are divided into front-middle-back office activities, as described below. In executing these functions, MBCP may rely on third-parties to assist in performing various functions. In doing so, MBCP will preserve the intent of the separation of functions described herein.

4.4.1 Front Office

The Front Office is headed by the Director of Power Services. The Front Office has overall responsibility for (1) managing all commodity and transmission activities related to procuring and delivering resources needed to serve CCA's load, (2) the analysis of fundamentals affecting load and supply factors that determine CCA's net position, and (3) transacting within the limits of this Policy, and associated policies, to balance loads and resources, and maximize the value of CCA's assets through the exercise of approved optimization strategies. Other duties associated with these responsibilities include:

- a. Develop and analyze hedging products and procurement strategies, and bring recommendations to the RMC;
- b. Prepare each month a monthly operating plan for the prompt months that gives direction to the day-ahead and real-time trading and scheduling staff regarding the bidding and scheduling of CCA's resource portfolio in the CAISO market;
- c. Develop, price and negotiate purchase and/or sale transactions for energy, Resource Adequacy, renewable and green-house gas free energy;
- d. Forecast loads;
- e. Keep accurate records of all transactions they enter

4.4.2 Middle/Back Office

Middle and Back Office functions will be the responsibility of the Director of Internal Operations. The Middle Office provides independent market and credit risk oversight and is functionally and organizationally separate from the Front Office. The Back Office provides support with a wide range of administrative activities necessary to execute and settle transactions and to support the risk control efforts (e.g. transaction entry and/or checking, data collection, billing, etc.) consistent with this Policy. The Back Office is functionally and organizationally separate from the Front Office.

The Middle and Back Offices have primary responsibility for trading controls and for ensuring agreement with counterparties regarding the terms of all trades, including forward trading. Primary responsibilities include:

- a. Estimating and publishing daily forward monthly power and natural price curves for a minimum of the balance of the current year through the next calendar year
- b. Calculating and maintaining the net forward power positions of CCA
- c. Ensuring that CCA adheres to all risk policies and procedures of the CCA in letter and in intent
- d. Maintaining the overall financial security of transactions undertaken on behalf of CCA
- e. Implementing and enforcing credit policies and limits
- f. Handling confirmation of all transactions (physical and financial) and reconciling differences with the trading counterparties
- g. Reviewing transaction confirmations for adherence to approved limits
- h. Ensuring all trades have been entered into the appropriate system of record
- i. Carrying out month-end checkout of all physical and financial transactions each month
- j. Reviewing models and methodologies and recommending RMC approval

Section 5: DELEGATION OF AUTHORITY

With the approval of the Policy, the MBCP Board is explicitly delegating operational control and oversight to the RMC and MBCP staff, as outlined through this Policy. Specifically, to facilitate daily operations of the CCA, the Board is delegating transaction execution authorities shown in the table below.

Position	Maturity Limit	Term Limit	Volume Limit (MWh) ¹	Value Limit (\$) ²
Risk Management Committee	60 Months	60 Months	7,500,000	60,000,000
Chief Executive Officer	36 Months	36 Months	4,500,000	40,000,000
Director of Power Supply Services	24 months	24 Months	3,000,000	30,000,000

¹Volume limit applies only to energy purchases per single contract, including renewable energy and GHG-free energy purchases.

²Value limits apply to non-energy product transactions (e.g., Resource Adequacy and Renewable Energy Credits).

These authorities will be applied to wholesale power activity executed outside of the California Independent System Operator (“CAISO”) markets. These limits provide MBCP needed authorities to manage risks as they arise. Transactions falling outside the delegations above require Board approval prior to execution. Activity with CAISO is excluded from this table due to the nature of the market, where prices for activity may not be known until after transactions are committed.

All procurement executed under the delegation above, must align with the MBCP’s underlying risk exposure (locational, volume and temporal) that is being hedged consistent with the approved Procurement Strategy.

The point of delivery for all products must be at a location on the CAISO transmission grid.

5.2 Monitoring, Reporting and Instances of Exceeding Risk Limits

The Middle Office is responsible for monitoring, and reporting compliance with, all limits within this Policy. If a limit or control is violated, the Middle Office will send notification to the Director of Power Services and the RMC. The RMC will discuss the cause and potential remediation of the exceedance to determine next steps for curing the exceedance.

Section 6: CREDIT POLICY

All Counterparties shall be evaluated for creditworthiness by the Middle Office prior to execution of any transaction and no less than annually thereafter. Additionally, Counterparties shall be reviewed if a change has occurred, or perceived to have occurred, in market conditions or in a company's management or financial condition. This evaluation, including any recommended increase or decrease to a credit limit, shall be documented in writing and includes all information supporting such evaluation in a credit file for the counterparty. A credit limit for a Counterparty will not be recommended, or approved without first confirming the Counterparty's senior unsecured or corporate credit rating from one of the nationally recognized rating agencies (S&P, Moody's, and/or Fitch) and/or performing a credit review or analysis of the Counterparty's or guarantor's financial statements. The credit analysis shall include, at a minimum, current audited financial statements or other supplementary data that indicates financial strength commensurate with an investment grade rating. Trade and banking references, and any other pertinent information, may also be used in the review process.

Once a counterparty has been determined to be creditworthy, a credit limit will be proposed. Although a counterparty may qualify for a certain maximum credit limit, anticipated transaction volumes and other business factors may prompt MBCP to select a lower limit that is considered more appropriate.

Counterparties that do not qualify for an unsecured Credit Limit must post an acceptable form of credit support or Prepayment prior to the execution of any transaction, unless otherwise approved by the CEO. A Counterparty may choose to provide a guarantee from a third party, provided the third party satisfies the criteria for a Credit Limit as outlined herein.

6.1 Maximum Credit Limit

Each new Counterparty Credit Limit or increase to an existing limit will approved by the RMC. The maximum amount of any Credit Limit extended to a counterparty shall not exceed \$50,000,000 unless approved in writing by the MBCP Board.

6.2 Counterparty Concentration

In addition to maintaining credit limits, MBCP staff shall strive to diversify transactions among counterparties. MBCP staff shall document the business reasons (e.g., differences in offer price, lacked of qualified suppliers, etc.) for awarding contracts to counterparties with high concentrations of credit exposure.

6.3 Credit Review Exceptions

Counterparties not subject to the above credit review criteria include those associated with day-ahead and current day purchases or market index based contracts where risks associated with market movements is minimal.

6.4 Credit Limit and Monitoring

The Middle Office will monitor the current credit exposure for each Counterparty with whom MBCP transacts and include such information in the Current Counterparty Credit Risk Report. This report will be made available, reviewed and communicated to the RMC pursuant to the reporting requirements outlined in Section 7.

Current credit exposure is a measure of the known exposures and composed of two primary exposures – (1) realized exposure and, (2) forward exposure. Realized exposure, a payable or receivable amount owed between counterparties, is a measurement of cash flow for billed and unbilled transactions. Forward exposure is a measure of current unrealized exposure and includes the measure of a counterparty's incentive to fulfill contractual obligations. Forward exposure measures the risk associated with having a payment default or the need to replace a transaction in the event of delivery default.

Section 7: POSITION TRACKING AND MANAGEMENT REPORTING

Minimum reporting requirements are shown below. The reports outlined below will be made available to RMC members:

- **Monthly Financial Model Forecast**

Latest projected financial performance, marked to current market prices, and shown relative to financial goals.

- **Monthly Net Position Report**

Prepare a forward net position report, not less frequently than monthly, and report the results to the RMC.

- **Weekly Counterparty Credit Exposure**

This report will show credit exposures for transactions executed by MBCP.

- **Monthly Risk Analysis**

This will include a stress test of financial forecast relative to financial goals.

- **Quarterly Board Report**

Update on activities and projected financial performance to be presented quarterly at MBCP Board meetings.

Section 8: POLICY REVISION PROCESS

MBCP's Energy Risk Management Policy will evolve over time as market and business factors change. At least on an annual basis, the RMC will review this Policy and associated procedures to determine if they should be amended, supplemented, or updated to account for changing business and/or regulatory requirements. If an amendment is warranted, the Policy amendment will be submitted to the MBCP Board for approval. Changes to appendices to this Policy may be approved and implemented by the RMC.

8.1 Acknowledgement of Policy

Any MBCP employee participating in any activity or transaction within the scope of this Policy shall sign, on an annual basis or upon any revision, a statement approved by the RMC that such employee has:

- Read MBCP's Energy Risk Management Policy
- Understands the terms and agreements of said Policy
- Will comply with said Policy
- Understands that any violation of said Policy shall be subject to employee discipline up to and including termination of employment.

8.2 Policy Interpretations

Questions about the interpretation of any matters of this Policy should be referred to the RMC.

All legal matters stemming from this Policy will be referred to General Counsel.

Appendix A: AUTHORIZED TRANSACTION TYPES, REGIONS AND MARKETS

All transaction types listed below must be executed within the limits set forth in this Policy. *(The following transaction types can be 'nonstandard' at MBCP subject to RMC approval)*

Over the Counter Products

- CAISO Market Products
 - Day-ahead and Real-time Energy
 - Congestion Revenue Rights
 - Convergence bids
 - Inter Scheduling Coordinator Transactions
 - Tagging into and out of CAISO
- Physical Power Products
 - Power
 - Physical Over-the-counter Options
 - Physical Resource Adequacy Capacity
- Physical Environmental Products
 - Renewable Energy Credits
 - Specified Source Power
 - Carbon Allowances and Obligations

Appendix B: NEW TRANSACTION APPROVAL FORM

New or Non-Standard Transaction Approval Form**Prepared By:****Date:****New or Non-Standard Transaction Name:****Business Rationale and Risk Assessment:**

- Product description – including the purpose, function, expected impact on net revenues (i.e. increase, manage volatility, control variances, etc.) and/or benefit to MBCP
- Identification of the in-house or external expertise that will be relied upon to manage and support the new or non-standard transaction
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues
- How the exposures to the risks above will be managed by the limit structure
- Proposed valuation methodology (including pricing model, where appropriate)
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new product
- Proposed accounting methodology
- Proposed Middle Office work flows/methodology, including systems
- Brief description of the responsibilities of various departments within MBCP who will have any manner of contact with the new or non-standard transaction

Reviewed by:

Director of Power Services

Date

Director of Internal Operations

Date

Chief Executive Officer

Date

Appendix C: DEFINITIONS

Back Office: That part of a trading organization which handles transaction accounting, confirmations, management reporting, and working capital management.

Bilateral Transaction: Any physical or financial transaction between two counterparties, neither of whom is an Exchange or market entity such as CAISO.

Cash Flow at Risk: A measure of the potential shortfall in cash flow from a specified level during a specified period of time at a specified confidence level.

CAISO: California Independent System Operator. CAISO operates a California bulk power transmission grid, administers the State's wholesale electricity markets, and provides reliability planning and generation dispatch.

CCA: Community Choice Aggregator. CCAs allow local government agencies such as cities and/or counties to purchase and/or develop generation supplies on behalf of their residents, businesses and municipal accounts.

CFTC: Commodity Futures Trading Commission. The CFTC is a U.S. federal agency that is responsible for regulating commodity futures and swap markets. Its goals include the promotion of competitive and efficient futures markets and the protection of investors against manipulation, abusive trade practices and fraud.

Clearing: Clearing is the process of reconciling purchases and sales of a commodity, as well as the direct transfer of funds from one financial institution to another. The process validates the availability of funds, records the transfer, and in the case of financial securities, ensure the delivery to the buyer.

Commodity: A basic good used in commerce that is interchangeable with other commodities of the same type. Commodities are most often used as inputs in the production of other goods or services. The quality of a given commodity may differ slightly, but it is essentially uniform across producers. When they are traded on an exchange, commodities must also meet specified minimum standards, also known as a basis grade.

Confirmation Letter: A letter agreement between two counterparties that details the specific commercial terms (e.g., price, quantity and point of delivery) of a transaction.

Congestion Revenue Right: A point-to-point financial instrument in the Day-Ahead Energy Market that entitles the holder to receive compensation for or requires the holder to pay certain congestion related transmission charges that arise when the transmission system is congested.

Counterparty Credit Risk: The risk of financial loss resulting from a counterparty to a transaction failing to fulfill its obligations.

Day-ahead Market: The short-term forward market for efficiently allocating transmission capacity and facilitating purchases and sales of energy and scheduled bilateral transactions; conducted by CAISO prior to the operating day.

Delivery point: the point at which a commodity will be delivered and received.

FERC: Federal Energy Regulatory Commission. FERC is a federal agency that regulates the interstate transmission of electricity, natural gas and oil. FERC also reviews proposals to build liquefied natural gas terminals, interstate natural gas pipelines, as well as licenses hydroelectric generation projects.

Front Office: That part of a trading organization which solicits customer business, services existing customers, executes trades and ensures the physical delivery of commodities.

Hedging products: Hedging products means capacity, energy, renewable energy credits or other products related to a specific transaction.

Hedging Transaction: A transaction designed to reduce the financial exposure of a specific outstanding position or portfolio; “fully hedged” equates to complete elimination of the targeted risk and “partially hedged” implies a risk reduction of less than 100%.

IOU: An Investor Owned Utility (IOU) is a business organization providing electrical and/or natural gas services to both retail and wholesale consumers and is managed as a private enterprise.

Middle Office: That part of a trading organization that measures and reports on market risks, develops risk management policies and monitors compliance with those policies, manages contract administration and credit, and keeps management and the Board informed on risk management issues.

Speculation: Speculation is the act of trading an asset with the expectation of realizing financial gain resulting from a change in price in the asset being transacted.



COMMUNITY CHOICE
P A R T N E R S
SECURING YOUR COMMUNITY'S ENERGY FUTURE

Pioneer Community Energy ERMP



Pioneer Community Energy

Energy Risk Management Policy

Version 1.0

DRAFT

November 27, 2017

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1. Philosophy, Objectives and Scope

This Energy Risk Management Policy outlines the philosophies and objectives of the Pioneer Community Energy (Pioneer) Governing Board (the "Board"). The Pioneer Energy Risk Management Regulations, expand on the roles, strategies, controls and authorities authorized in this policy. to form Pioneer's comprehensive energy risk management program. Energy Risk Management Regulations shall be read in conjunction with this policy.

1.1. Risk Philosophy

The overall goal of Pioneer's Energy Risk Management policy is to:

- Serve Pioneer's needs subject to Board approved risk tolerance limits.
- Provide as much power supply (generation and power procurement) cost certainty for its customers as possible while maintaining a least cost supply portfolio.
- Enhance the value of Pioneer assets to meet Pioneer's financial requirements..

As a joint powers authority, Pioneer is in the business of generation and procurement of energy for the benefit of its customers. Pioneer's objective is to develop the least cost supply portfolio to meet the load requirements of its customers, while maximizing revenues from sales of surplus energy, capacity and other wholesale energy services (e.g. resource optimization). However, unlike a private-sector entity, Pioneer's primary purpose relative to the generation and procurement of power supply is to serve its customers at the lowest possible cost. Pioneer's goal is to be a cost hedger for its customers; therefore, Pioneer is precluded by this policy from engaging in speculative activities typical to many organizations orientated toward profit maximization.

The Pioneer Board and its management recognize that certain risks are incidental to normal power supply operations and hedging activities. Pioneer's policy is to avoid unnecessary risk and to limit, to the extent practicable, any risks associated with normal cost-hedging activities. This document serves as a vehicle to describe and define the limits for activities considered as appropriate for Pioneer in its normal course of business.

1.2. Business Activities

A primary part of Pioneer's main business is to procure or produce power supplies, and reserves to meet its customer load requirements. The resource (capacity/energy) supply portfolio consists of physical assets such as power plants, fixed and variable priced supply contracts of varying lengths, congestion revenue rights, and agreements for other related supplies and services needed to ensure reliable delivery of electricity to customers..

1.3. Transacting Objectives

Pioneer's overall transacting objective is to meet the load requirements of its customers with an optimized resource supply portfolio. Pioneer's objectives when transacting for the procurement of energy supplies and services are as follows:

- Meet aggregate customer load requirements including energy, capacity and reserves;
- Provide stable rates for Pioneer retail customers;
- Obtain the best available price for power supply while complying with the requirements of this policy;
- Manage Pioneer assets to optimize value;
- Act to limit exposure to extreme market system changes;
- Follow effective wholesale counterparty credit management procedures; and
- Establish and then maintain an investment grade credit rating.

1.4. Scope of Policy

This Energy Risk Management Policy (ERMP) addresses risks arising from Pioneer's participation in the Western Interconnection energy markets and applies to all transactions into which Pioneer enters. This ERMP does not address the following types of general property and casualty business risk: fire, accident and casualty; health, safety, and workers' compensation; general liability; and other such typically insurable perils. The term "risk management," as used herein, is therefore understood to refer solely to risks related to participation in wholesale energy markets as herein defined.

Pioneer is exposed to three quantifiable risks: load and resource variability (volumetric), cost variability (price), and counterparty credit risk. From the perspective of risk mitigation, Pioneer's primary objective is to cover load and optimize the value of assets. Taking risks in order to arbitrage market opportunities or risks unrelated to Pioneer's normal power supply business activities is not permitted.

Pioneer is also exposed to regulatory and operational risks. However, these exposures are not quantifiable as they affect structural change. As a result, these risk categories are managed as separate enterprise risk exposures and are not directly governed by this Energy Risk Management Policy.

This policy prescribes the management organization, authority and processes to monitor, measure and control the risks to which Pioneer is exposed in the normal course of business. Specific methodologies used to measure, monitor and control these risks shall be established by the Executive Director's Risk Oversight Committee (ROC) in accordance with sound utility practices and included in the Energy Risk Management Regulations.

1.5. Applicability

This ERMP is effective immediately upon its adoption by the Pioneer Board. It applies to Pioneer's wholesale supply operations, long-term contracting for energy, capacity, and services, acquisition of generation resources, credit risk management and other related ancillary activities undertaken by Pioneer.

1.6. Policy Review and Amendments

Prudence is required in implementing any and all policies and procedures. Market and industry norms, technology and risk tolerances tend to change over time. Therefore, this policy should be reviewed at least annually, or as necessary, in order to make adjustments in response to changes in business objectives and/or industry norms. Amendments to this ERMP shall be done only by approved Resolution of the Pioneer Board.

2. Risk Strategy & Parameters

An important aspect of implementing an overall energy risk management policy is the development of related strategies to mitigate all of the related risks associated with energy transacting activities. The key strategies of Pioneer are outlined below.

2.1. Counterparty Risk Management

Counterparty risk is defined as the exposure to economic loss resulting from default by a party to a contract (e.g., a *counterparty*). Counterparty risk affects both contracts requiring physical settlement and those specifying monetary settlement. For all fixed price energy transactions, the counterparty must possess at least a BBB- (or equivalent investment grade rating) by a nationally recognized statistical rating organization (NRSRO). Pioneer staff may consider counterparties with a rating below investment grade, or a counterparty without a NRSRO rating on a case-by-case basis with the approval of the ROC.

Effective wholesale counterparty management and credit analysis is essential to mitigate the counterparty risks associated with commodity transactions in the energy markets. The objective is to preserve Pioneer's capital, liquidity, and supply reliability by limiting counterparty credit risk and supplier concentration to acceptable levels. Methodologies to achieve this objective are set forth in the Energy Risk Management Regulations. Qualified third-party service providers may be used to monitor and manage counterparty risk.

2.2. Balanced Load

Pioneer shall maintain an integrated and balanced portfolio of resources to cover its load obligations.

2.3. Minimum Coverage Requirements

Pioneer shall establish minimum coverage requirements for capacity and

energy in accordance with Pioneer Board approved Resource Adequacy Policies and as determined by the ROC and outlined in the Energy Risk Management Regulations.

2.4. Diversification of Portfolio

Pioneer shall develop a resource portfolio that includes diversification in generation type, contract duration, geographic location, counterparty, pricing terms, cash reserves and types of products.

2.5. Purchase to Cover Load Serving Obligations - No Speculation

As discussed in Section 1.3, Pioneer's overall objective for energy procurement activities is to cover its load serving obligations. In the course of performing these activities, Pioneer shall not engage in activities that expose Pioneer to speculative transacting risks and shall only utilize approved transaction parameters as determined by the ROC and outlined in the Energy Risk Management Regulations.

2.6. Use of Derivatives and Financial Transactions

Use of financial derivatives or transactions (as opposed to physical or "embedded" options) is allowed in limited circumstances. These include transactions used to set price caps and floors, or hedge against load/price volatility. Examples include:

- Exchange traded Puts and Calls
- Electric Futures
- Electric Options
- Weather Derivatives

Use of certain types of financial derivatives is necessary in order to mitigate various risks outlined in this policy while optimizing the resource portfolio. Such types of allowable financial derivatives or transactions (but not individual transactions) must be approved by the ROC as outlined in the Energy Risk Management Regulations as developed by the ROC in accordance with this policy.

3. Risk Controls

3.1. Control Principles

Pioneer will strive to conduct its energy risk management activities in accordance with best practices of the energy industry, but implementing such practices must be cost justified and balanced between costs and benefits. Processes and control systems must be in place that allow Pioneer to identify, measure, monitor, control and track its risk exposures. These processes and control systems shall include the following risk management control principles:

- Appropriate segregation of duties and internal controls will be used;
- Appropriate systems to ensure accurate and effective management reporting;
- Necessary resources in place to achieve management objectives;
- Attract and retain skilled and trained personnel;
- Cross-train and provide cross coverage;
- Employees conducting energy transactions are free of conflicts of interest;
- Authority and approval delegation is commensurate with accountability and capability;
- Performance measurement and reporting incorporate risk and return measures;
- Ongoing monitoring of control effectiveness.

3.2. Internal Controls

Internal controls shall be based on proven principles that meet the stringent requirements of generally accepted auditing standards (GAAS), financial institutions and credit rating agencies. The required controls shall include all customary and usual business practices designed to 1) prevent errors and improprieties, 2) ensure accurate and timely reporting of results of operations and other information pertinent to management, and 3) facilitate attainment of business objectives.

3.3. Segregation of Duties

Responsibilities related to energy transacting shall be segregated in a manner consistent with the control principles listed above by means of clearly defined roles and responsibilities for the Front Office, Middle Office and Back Office

operations. Specific roles, responsibilities and organizational structure of these functions are outlined in Section 4 of this policy.

These controls shall be fully integrated into all Pioneer business activities and there shall be active participation by senior management in risk management processes.

3.4. Conflicts of Interest

All Pioneer employees who are engaged in energy supply resource transactions, counterparty credit evaluation, or oversight of the foregoing and are employed in any job classification listed in the Appendix of Designated Positions of the Pioneer Conflict of Interest Code are required to complete annual conflict of interest filings on FPPC Form 700 and disclose investments as required by that code.

In addition to the foregoing disclosure requirement, Pioneer employees engaged in energy supply resource transactions, counterparty credit evaluation or oversight of the foregoing, are barred from investing in any company with whom Pioneer has consummated energy or related purchases or sales within the last two years.

Such employees must divest existing direct holdings in energy counterparties prior to engaging in any negotiating, evaluating, transacting or oversight functions. The ban on investment and requirement for divestment applies regardless of whether or not the investment would be of sufficient size (\$2,000) to require disclosure on FPPC Form 700.

Pioneer employees supervising staff who are subject to this policy are responsible for routinely reviewing Form 700 of each such staff member for the purpose of identifying potential financial conflicts of interest. General Counsel will assist in reviewing these forms and providing legal advice in connections with such reviews upon request.

4. Roles, Responsibilities, & Organization

This section defines the overall roles and responsibilities for implementing this Energy Risk Management Policy. The coordinated efforts of personnel across several divisions are required to successfully implement Pioneer's risk management program. This Section 4 outlines the basic roles and responsibilities of each function. Specific details and the specific roles and responsibilities of the oversight and operational divisions within the energy risk management program structure of Pioneer are outlined in the Energy Risk Management Regulations as developed by the ROC and revised from time to time.

4.1. Pioneer Board

The Pioneer Board has the ultimate oversight over Pioneer operations and is responsible for establishing a framework for risk management and ensuring that risk management results are achieved as planned. The Board shall

approve and establish organizational policies for risk management and delegate to the Executive Director the responsibility for implementing the ERMP. With responsibility for the ultimate oversight over Pioneer operations, the Board shall be responsible to insure risk management results are achieved in accordance with this policy.

4.2. Executive Director

The Executive Director has overall responsibility for implementing the ERMP and for communicating risk management issues to the Board. The Executive Director shall be responsible for delegating specific duties for carrying out the policy and insuring compliance with it by all affected Pioneer employees or contractors. The Board acknowledges that the Executive Director will establish and maintain the Executive Director's Risk Oversight Committee (ROC) and will delegate certain functions to the ROC, which delegation is authorized by this ERMP.

4.3. Risk Oversight Committee (ROC)

The ROC is responsible for overseeing compliance with risk management policies within Pioneer. The Committee serves as the highest level of organizational risk management reporting to the Executive Director. The ROC shall consist of the Executive Director who shall serve as the Chair of the ROC, the Director of Finance and Administration, and the Director of Power Resources. General Counsel will provide legal support to the ROC. The current designation is listed in Appendix A. A quorum for the ROC to do business shall be not less than three Committee members or their designees.

The ROC will meet at least quarterly, to act on the responsibilities stated above. The Director of Power Resources may request the ROC to convene in a timely fashion if ROC approval is required for any transaction. Minutes to each meeting will be maintained according to the Energy Risk Management Regulations.

The ROC shall make regular reports to the Board regarding business conducted by the ROC within 45 days after its regular quarterly meeting.

The ROC shall have the responsibility for ensuring that business is conducted in accordance with the ERMP. The ROC shall adopt and keep current "Energy Risk Management Regulations" which shall define in detail the internal controls, strategies and processes for managing risks covered under this policy. Specific ROC responsibilities are outlined in detail in the Energy Risk Management Regulations.

4.4. Front Office (Planning and Procurement)

The Front Office is responsible for resource planning and procuring resources to meet the physical, financial and contractual requirements of Pioneer, with load/resource balancing provisions and such other arrangements as may be

approved by the Board in the future. This function includes purchase of power, contract administration, managing the risk assumptions associated with electricity transactions, including physical and financial needs analyses, energy purchases and sales, procurement of ancillary services and coordinating energy delivery scheduling. The Front Office is responsible for ensuring that the procedures and processes needed to transact business within the risk management policy are in place and they perform all duties related to actual transacting in the wholesale energy markets. The Front Office is the primary interface with potential wholesale transacting counterparties. The Director of Power Resources is responsible for managing the Front Office. Front Office activities are conducted by the Power Resources Division of Pioneer and detailed responsibilities are outlined in the Energy Risk Management Regulations. The Front Office activities and responsibilities may be outsourced to qualified third-party service providers.

4.5. Middle Office (Risk Management) Controls and Reporting

The duties of the Middle Office will be conducted by Risk Management Section of the Finance and Administration Division. Its primary purpose is to manage risk oversight and controls. The Middle Office provides independent oversight of the risks assumed by the Front Office in the course of transacting energy products and services. The Middle Office must be independent from the Front Office functions. The Director of Finance and Administration is responsible for managing the Middle Office.

Detailed responsibilities of the Middle Office are outlined in the Energy Risk Management Regulations.

4.6. Back Office (Settlements and Recording)

The Back Office is primarily responsible for settlement of bills, recording transactions, bookkeeping and accounting, and contract compliance. It is responsible for providing assurance of accurate transaction records and settlements. The Director of Finance and Administration is responsible for managing the Middle Office.

Back Office functions are conducted by personnel in the Finance and Administration Division, Finance Section.. Detailed responsibilities of the Back Office are located in the Risk Management Regulations.

4.7. Third-Party Service Providers

Pioneer management and staff may use qualified third-party service providers in performing the duties required in this Energy Risk Management Policy and the Energy Risk Management Regulations so long as such service relationship is authorized by Board action.

4.8. Auxiliary Functions

Additional issues impacting the overall power supply and risk management

program include establishment of financial reserve requirements, which are generated by auxiliary support functions in the Finance and Administration Division.

The Finance Section of the Finance and Administration Division is responsible for preparation of the budget and the calculation of rates used to bill customers for power supply usage. In addition, the Finance and Administration Division is responsible for establishment of necessary reserve levels for the various projects which may be developed and owned by Pioneer and for Pioneer in general. The Finance and Administration Division is also responsible for establishment of reserves necessary for credit risks related to counterparty credit as mentioned in this policy and more specifically defined in the Energy Risk Management Regulations.

5. Authorities, Delegations, Limits and Prohibitions

All executed transactions shall conform to the policies set forth herein. It shall be the responsibility of the ROC, with approval of the Executive Director, to establish appropriate individual transacting authority limits for the various personnel and third-party service providers involved in the Front Office function (Power Resources Division). All staff with designated responsibility for Middle Office or Back Office functions are strictly prohibited from executing any wholesale transactions. The Middle Office shall be responsible for informing counterparties of such approved authorizations, including transacting authority and restrictions, along with product types and/or term and dollar limits.

6. Policy Compliance

6.1. Compliance Exceptions

Compliance exceptions are actions which violate the authority limits or directives set forth herein or in the Energy Risk Management Regulations as developed and adopted pursuant hereto by the ROC.

6.2. Reporting of Exceptions

Exceptions to mandated policies, procedures and regulations shall be reported to the ROC within 48 hours after they are identified as provided in the Energy Risk Management Regulations.

6.3. Audit

Compliance with this ERMP and with the specific Energy Risk Management Regulations instituted pursuant to this ERMP shall be subject to examination by Pioneer's independent auditors or by such other reviewers that Executive Director, Board or the ROC may appoint to evaluate the effectiveness of mandated controls.

7. Reserves

The ROC and the Director of Finance and Administration, or his/her designee, are responsible for ensuring adequate reserves for energy price exposure and credit losses are maintained.. The reserve estimate methodology, as established by the Finance and Administration Division, shall be reviewed and approved as needed to ensure appropriate reserve levels are maintained and funded. The reserves levels shall be annually approved by the Board as a component of the Final Budget.

8. Systems, Tools and Training

Pioneer employees who are authorized to perform energy risk management functions on behalf of Pioneer shall be provided with the necessary systems and tools to support all risk management processes.

Provision shall be made in the budgets submitted for each division, which performs market risk management functions on behalf of Pioneer, for the acquisition and maintenance of computer systems, software, communications equipment, data services, other analytical measurement and reporting tools, and for outside consultants and contractors.

Provision shall also be made in the budgets submitted for each Pioneer division that perform market risk management functions on behalf of Pioneer for managers and staff to attend seminars and courses in risk management on a regular basis.

Appendix A

Risk Oversight Committee (ROC) Membership

As currently designated by the Executive Director, the ROC will be made up of the following:

Pioneer Executive Director (Chair)

Pioneer Director of Finance and Administrative Services (Vice Chair)

Pioneer Director of Power Resources

If unavailable, each of the above may designate an official designee to perform their duties on this Committee.

Legal Advisor:

Pioneer General Counsel or Asst. General Counsel

RISK ASSESSMENT METHODOLOGIES

1. Risk Assessment Methodologies

1.1. CRR Valuation and Risk Assessment

CRR valuation is based upon historical data. Pioneer values its CRR holdings individually and as a portfolio. Along with the average valuation, Pioneer calculates the fifth (5th) percentile and 95th percentile position of each CRR Source/Sink combination.

Pioneer performs a stress test on its CRR nominations. The stress test identifies the minimum, maximum and expected revenue for each available seasonal/monthly historical period.

The highest risk to Pioneer's CRR allocation and auction portfolios is a collateral call. The CAISO does not net the portfolios, so the risk is a result of the separate collateral requirements for each portfolio. The expected value of Pioneer's allocated CRR portfolio is positive. Pioneer's auction portfolio consists only of unwound allocated CRR; as such, the expected value is negative. A collateral call could occur if an event increased the expected negative value of the auction portfolio even though the actual day-ahead market position would be offset by an increase in the expected value of the allocation portfolio.

Pioneer mitigates this risk by leaving all its auction revenue in the CRR collateral account at the CAISO. Pioneer's initial deposits of \$500,000 for the annual auction, and \$100,000 for the monthly also remain in the collateral account.

Pioneer will only request a return of its auction revenue after the end of each monthly/seasonal period, thereby maintaining usable secured available credit well in excess of its required collateral.

1.2. Mark-to-Market Methodology

The MTM calculation is a method to value future or forward open trading or hedge positions on an on-going basis to track market price changes. Once a position is taken in the market for some future delivery period, the value of that position must be monitored and managed on a routine basis. The volatility and volume of activity for a particular traded product will dictate how often it is necessary to update the MTM valuation of such product. Pioneer will "mark" all open positions on no less than a MONTHLY basis, or as necessary, given market dynamics.

Long Term Transactions for future delivery or receipt of Energy. Several trading hubs host the majority of physically traded contracts such as Palo Verde (PV), California Oregon Border (COB), Mid-Columbia (Mid-C), California South (SP15), and California North (NP15). There

are also several emerging hubs in the desert southwest and rocky-mountain areas. Publications such as *Megawatt Daily* and *Energy Market Report* list the daily prices traded at more heavily traded hubs. Information sources such as McGraw Hill publishing report broker trades for forward contracts at the most active trading points. For illiquid products or trading points, the MTM may be applied less frequently than daily. In these circumstances a weekly or monthly mark may be appropriate. However, periodic market inquiries, as appropriate, should be made to capture any market movement.

The following information sources, or their equivalents as approved by Middle Office and Front Office are to be used to mark open positions for the traded products and hubs listed below:

- **WSPP Contracts for Liquid Products and Trading Hubs:** The standard forward traded electricity products as reported in the *Energy Market Report*, published by *Insight Research, Inc.*, or other relevant broker/trade reporting system. This source may be replaced at such time that Pioneer has available an information service such as the Intercontinental Exchange ("ICE"), *Reuters North America Power* or other reliable source.
- **WSPP Illiquid Products and Trading Points:** these products are likely to change value less often than the more standard products. Periodic (weekly or bimonthly) probing of the market may be necessary to obtain current valuation. It may be possible to identify basis relationships between the liquid and illiquid trading points resulting in an approximate valuation.

1.3. Cost Value at Risk Calculation Methodology

In its most literal sense, Value at Risk (VaR) refers to a particular *amount of money*, the maximum amount likely to be spent or lost over some period, at some specific confidence level. Pioneer has defined its supply management activity as a cost hedging activity. Therefore, for purposes of power resources management, Cost VaR is defined as a single, summary statistical measure of possible costs that are in excess of, expected costs.¹

Traditional VaR methodology (as practiced in the financial sector) has two important characteristics. The first is that it provides a common consistent measure of risk across different positions and risk factors. The other characteristic of VaR is that it takes account of the correlations between different risk factors. If two risks offset each other, the VaR allows for this offset and tells us that the overall risk is fairly low. If the same two risks don't offset each other, the VaR takes this into account as well and gives us a higher risk estimate.

¹ Specifically, standard, or traditional, VaR is a measure of cash flow exposure due to "normal" market movements; traditional VaR would be used when monitoring hedge positions initiated with financial derivatives. Costs or losses greater than VaR estimates are suffered only with a specified small probability (e.g., 5% of the time, etc.). However, VaR is not a stress test – it will not indicate what a maximum loss may be 5% of the time.

Since Cost VaR tells us about Pioneer's maximum cost exposure, management can use it to determine internal capital allocation. Cost VaR can be used to determine capital requirements at the senior management level of the organization, and also down the line to the level of the individual transaction decision. The higher the risk associated with the transaction, the higher the VaR and the greater the capital requirement. Cost VaR can also be used to assess the risks associated with different transaction opportunities and the implications of various risk tolerance thresholds. Cost VaR can also be used to evaluate the performance of Divisions.

1. Methodology

The two (2) principal components of the traditional VaR calculation are the:

- Market
- Portfolio

The "Market" involves understanding and estimating how the particular market parameters behave over a specified holding period. This is captured by performing market parameter modeling. The "Portfolio" involves understanding and quantifying how the portfolio's value varies according to estimated changes in market parameters. This is captured by revaluation. The standards applied to market parameter modeling and revaluations are described below. These two components are illustrated as follows:

Market > **Market Parameter Modeling** >

- Distribution assumptions
- Correlation assumptions
- Parameter assumptions

VaR Calculation

Portfolio > **Revaluation** >

- Historical Simulation
- Monte Carlo Simulation
- Full revaluation
- Analytic (Covariance/Variance Method)
- Sensitivities
or any reasonable
- Sensitivity Analysis
combination of these

2. Market Parameter Modeling

During market parameter modeling, various assumptions are made in relation to the distributions and correlations between assets, or products in the case of electricity, within the same risk category, or hub jurisdiction (i.e., SP15 vs. COB, etc.). In addition, various

estimations are made with respect to the level of commodity prices and their implied volatilities. Market parameters should be modeled on the basis of the following:

- Distribution assumptions for the market parameters are normal (this is a primary assumption for Cost VaR);
- Parameters are usually estimated on the following:
 - a one (1) month holding period, which is consistent with the frequency of revaluation of all financial trading positions.
 - the historic time period of one (1) calendar year or 252 days, unweighted, should be used to calculate historic volatilities and correlations.

Although distribution assumptions are assumed normal, management recognizes that actual power price distributions have displayed a skewed distribution. Traditional VaR methodology is not currently appropriate for the electric power industry. However, it may be appropriate for measuring positions in natural gas, whether physical or financial. Cost VaR, in the context of electricity portfolios, is not concerned with duration or term parameters (such as holding periods, etc.) since electricity products currently have predefined terms (e.g., hourly product, month product, quarterly product, etc.)

For modeling purposes, the Cost VaR is taken from the 95.0% quartile of the distribution of changes in the hourly chronological simulation of loads and resources (1.645 standard deviations).

3. Portfolio Revaluation

Revaluation is the calculation of the changes in portfolio costs resulting from a change in specific model assumptions (i.e., price, risk tolerance, volatility, etc.).

Two revaluation techniques are permitted:

- Full revaluation: Full revaluation occurs where the transactions in the portfolio, or positions, are all individually marked to market value for each market rate scenario generated. This is also true for Cost VaR applications.
- Delta approximation: Delta refers to the change in one variable given a change in another variable. A sensitivity analysis is an *approximation* of the change in net present value for various sensitivities of the portfolio. Sensitivity analysis may be used only for linear approximation. For linear approximation the sensitivity of the rate of change of the price of the transaction to a small change in the market rate is calculated. This is more applicable to traditional VaR where linear relationships and correlations may exist between financial instruments. On a more simplified level, Cost VaR considers delta approximation when adjustments are made to parameters such as risk tolerance, price, and volatility.

For purposes of traditional VaR, the range should cover at least 1.645 standard deviations in either full revaluation or delta approximation. Any reasonable combination of the above is also permitted. For example, a combination of the above might be used for large portfolios which contain both complex and simple instruments and for which different revaluation

techniques are appropriate.

The risk measurement methodology must take the current mark-to-market value supplied and apply revaluation techniques to calculate the potential loss or VaR, which may arise from the future changes in market.

Note: Sensitivity analysis is appropriate for individually measuring risks which may not otherwise be measured on a full portfolio basis such as location or spread risks. Sensitivity analysis is not appropriate for products with non-linear price behavior. In particular, option portfolios contain a high degree of non-linearity. This means that the change in the portfolio value has a non-linear relationship with changes in the underlying asset price. In this case, a sensitivity analysis is no longer valid.

4. VaR Calculation

Monte Carlo simulation is the preferred approach to VaR calculation for all portfolios. This is also true for Cost VaR when simulating loads and resources. However, the Analytic Method (Variance/Covariance) will be used if Pioneer does not have the computing power necessary to generate a Monte Carlo simulation. Pioneer recognizes that the Analytic Method is inappropriate for portfolios with non-linear characteristics (i.e., optionality) and will make the necessary adjustments when portfolio non-linearity becomes significant.

Monte Carlo Simulation Method:

Monte Carlo simulation estimates Cost VaR from a simulated distribution that is derived by assuming particular theoretical market processes and simulating large numbers of random paths that prices, or other parameters, could follow. The method proposes that if we take a sufficiently large number of simulations, they will produce a simulated distribution that will converge to the unknown true distribution of portfolio values. VaR and Cost VaR can be inferred from the simulated distribution. The steps required in a Monte Carlo simulation are as follows:

- Perform market parameter modeling by estimating the parameters of the distribution (e.g., volatilities and correlations) using a historical time series of market parameters;
- Generate an appropriate distribution of random variables;
- Perform the simulation by applying the covariance to the random numbers to generate a set of correlated market parameter scenarios; and
- Apply market parameter scenarios to the portfolio and, using revaluation method set, generate a distribution of portfolio values.

Analytic Method (Variance/Covariance):

The Analytic Method is based on the same distribution assumptions for market parameter modeling as the Monte Carlo method but restricts the portfolio to linear risk components only. This allows the analyst to assume that the portfolio changes are normally distributed.

The steps required in the analytic VaR calculation are:

- Perform market parameter modeling by estimating the parameters of the distribution (e.g., volatilities and correlations) using a historical time series of market parameters;
- Calculate the vector of sensitivities with respect to the underlying spot rates;
- A first order approximation is used to calculate changes in portfolio value. Given the normality assumption, the distribution parameters can then be calculated analytically using the sensitivities determined in step 2 above.

The VaR is defined as 1.645 the standard deviation of the change in portfolio value which equals – under the assumption of zero mean – a confidence level of 95%.

1.4. Cost VaR Stress Testing Methodologies and Procedures

In broad terms, there are two (2) main approaches to Cost VaR stress testing. The first of these focuses on the impact of particular specified scenarios – typically a fairly limited number of such scenarios – that are fed into an analytical process. This approach to stress testing is usually known as scenario analysis. The term “stress testing” is used here to apply to any procedures that attempt to evaluate the impact of hypothetical future events on Pioneer’s hedging and/or transacting portfolios.

The term “scenario analysis” is used to apply to that type of stress testing that focuses on particular specified *scenarios*, as distinct from the second type of stress testing that specifies classes of mathematical or *statistical possibilities* and then works through these possibilities in a mechanical way. Note that scenario analysis only indicates what Pioneer stands to “spend” in a particular circumstance, and does not indicate (and is not designed to indicate) how likely any particular circumstance is to occur. Scenario analysis is therefore a natural complement to Cost VaR approaches that indicate something about the probability of a clearly defined event, but do not as such identify what Pioneer would spend if the event actually occurred.

The Cost VaR stress testing methods approved for use by the ROC include 1) worst-case scenario analysis, and 2) extreme value analysis.

Worst-Case Scenario Analysis (WCSA):

WCSA allows an examination of the worst case that is *expected to occur* (Boudoukh, Richardson and Whitelaw, 1995). This approach is useful when there is concern about maximum possible costs over a particular horizon period (e.g., one month, one year, etc.) and an expectation of some savings or cost over each sub-period (e.g., each day or month). The worst-case scenario is the cost associated with the most adverse daily outcome. If each outcome is a random variable Z_i , and there are n sub-periods in our horizon, then the worst-case scenario is:

- $\text{Min}[Z_1, Z_2, \dots, Z_n]$

The actual worst-case scenario can now be estimated by running simulations of the

random Z variables.

Extreme Value Analysis (EVA):

This approach starts from the premise that the extreme values of the cost distribution are what we are mostly concerned about, and then uses the statistical theory of extreme values to determine maximum extreme costs with a determined degree of confidence.

In practice the distribution of extreme values is not known, but the key insight of EVA theory is that this distribution converges in large samples to a limiting distribution of a particular known form. An analytic solution for the Cost VaR can then be found from this distribution once a desired confidence level is specified. The important parameter is the tail index, which gives the thickness of the tails (e.g., for a *t*-distribution, this is the number of degrees of freedom).

The Extreme Value Analysis approach has various attractions: (1) It deals directly with the extreme values typical of the electric Energy market. (2) It provides a firm methodological basis for the estimation of Cost VaR. (3) It does not impose any particular form on the underlying price distribution, but instead allows this distribution to take any well-behaved form, including an asymmetric (i.e., skewed) one. (4) It produces a simple analytical formula for Cost VaR. (5) The approach is robust, flexible and easy to use.

Note: Standard VaR methodology will be used to evaluate exposures resulting from activity in financial instruments. Currently, the electric power industry has not developed a highly liquid market in financial instruments. However, the natural gas market is relatively mature and offers opportunities in the use of financial instruments for the purpose of cost hedging. Standard VaR methods can be utilized more appropriately with natural gas as market performance generally follows a normal distribution.

Backtesting:

The purpose of a backtest is to compare the expected cost (at the then forward price) with actual cost (at the spot price), and implied volatility with actual volatilities, to determine if Pioneer's cost VaR is adequate (conservative enough) to capture the potential market exposure.

To serve such purpose, staff may use the same open position number forecast 12 months ago and apply the DA spot market price in the past 12 months. This number would be the "actual cost" of the open position had it stayed unchanged and filled in the DA market. Comparing the difference between the two numbers will provide guidance as to whether the variance falls within the 95% cost VaR boundary and identify whether Pioneer would have been better off leaving the position open or covering it 12 months ago.

Pioneer has performed backtesting of the Cost VaR measures during the in-house model development and validation phase. The backtesting results revealed adequacies in the Cost VaR measures (given the statistical confidence intervals used or various parameters).

APPENDIX 9

Recommended Coverage

The following Time-Price Coverage Matrix will be used as a guide for Pioneer's short term and long term procurement strategies. The objective of the Time-Price Coverage Matrix is to develop a procurement strategy focused on hedging against the risk of open load positions, as measured over time, and to mitigate Pioneer's exposure to market price volatility and other pricing risk. The actual covered positions taken by Pioneer, reflected as a percentage of forecasted load, may deviate from the following Time-Price Coverage Matrix based upon Pioneer's staff evaluation of current market conditions and other applicable requirements (e.g., regulatory requirements).

Months to Delivery		Price Matrix Percentile						
		>60%	60%	50%	40%	25%	10%	<10%
		Covered Position as a % of Forecasted Load						
0+	3	80%	80%	85%	85%	90%	90%	100%
3+	6	70%	70%	75%	80%	80%	90%	100%
6+	9	70%	70%	75%	80%	80%	80%	90%
9+	12	60%	60%	70%	80%	80%	80%	90%
12+		60%	60%	70%	80%	80%	80%	90%

Financial Policies

Operating Reserves

Cash on Hand

Scope and Purpose – Cash on Hand is the amount of cash necessary to support day to day operations. Cash on Hand is an amount of cash available at any given time, which is not otherwise designated for use or expenditure. It is essential that Pioneer maintain adequate levels of Cash on Hand to ensure stable services and rates by mitigating for economic uncertainty arising from current and future financial risks (e.g., seasonal revenue fluctuations, revenue shortfalls, unanticipated expenses, cash flow impacts from semiannual debt service payments). Suppliers, lenders and credit rating agencies consider the availability of Cash on Hand in their evaluations of continued creditworthiness. Very stable and established organizations may designate as little as 45 days of operating expenditures for Cash on Hand. Six months of operational expenditures is on the very conservative end of the spectrum for enterprise funds. Four months of operating expenses is appropriate for a new entity in the process of establishing its credit and financial wherewithal.

Appropriate Level of Cash on Hand is calculated by averaging monthly operating expenditures and multiplying by four.

Average Monthly Operational Expenditures \$500,000 X 4 = Cash on Hand: \$2,000,000

Use and Replenishment of Cash on Hand - Cash on Hand should be used to offset unanticipated expenditures, or for normal expenditures which have come in at a higher than expected amount. It may also be used to compensate for revenue short-falls due to aberrations in demand. Examples of appropriate use of Cash on Hand: an unseasonably cool summer month decreases demand for electricity, resulting in lower than expected revenues. Another example may be to pay for expenses associated with unanticipated regulatory proceedings or legislative advocacy.

Cash on Hand should be replenished with the first available revenues not otherwise necessary to support operations.

Allowance for Uncollectable Accounts

Scope and Purpose – The allowance for uncollectable accounts provides a reserve to compensate for ratepayer revenues that may become uncollectable. The longer an account balance remains delinquent, the less likely it is that the amount due will be collected in full, and the greater the expense associated with collection. Allowance for uncollectable accounts is facilitated through reducing the budget line item for Electricity Sales. Since the initial feasibility analysis, a conservatively estimated 0.5% of Electricity Sales has been utilized for financial modeling of the CCA Program. As a new entity, it is prudent for Pioneer to continue to conservatively estimate the allowance for uncollectable accounts at 0.50%, until it has gained data based on actual collection experience. The amount utilized for uncollectable accounts should be reviewed and adjusted annually, taking into account total electricity sales estimates and actual collection experience.

Appropriate Amount of Allowance for Uncollectable Accounts is calculated by multiplying Annual Electricity Sales by 0.5%.

Budgeted Annual Electricity Sales \$75,239,824¹ X 0.5% = \$376,199

Use and replenishment of funds – The amount for the Allowance for Uncollectable Accounts will be provided by reducing the budget line item for sales of electricity revenues. Therefore the amount for the Allowance for Uncollectable Accounts will be set aside making it unavailable for appropriation. Each annual budget should include a reduction to Electricity Sales to reflect an amount for allowance of uncollectable accounts. As part of the annual budget process, the amount of the allowance for uncollectable accounts should be reviewed, as stated above. The amount of the allowance for uncollectable accounts should also be reviewed and adjusted anytime rates are adjusted.

Power Procurement Reserves

Rate Stabilization Reserves

Scope and Purpose - Pioneer has committed to providing lower and more stable rates. Building Rate Stabilization Reserves ensures that rates will be more stable. Prudent energy supply management includes provisions to ensure that adequate reserves for energy price exposure and credit losses are maintained. When needed power has not yet been purchased (uncovered load), the related purchases are subject to future market fluctuations. Adequate reserves protect against market volatility, as reserves can be drawn upon in adverse market conditions to offset higher than expected prices, which allows the CCA Program to ride through market fluctuations, without the need to impact customer rates.

Cost Value at Risk (VaR) Calculation Methodology² (Cost VaR) provides a calculation for maximum cost exposure. Cost VaR can then be used to determine mitigations that can be utilized to offset the risk associated with maximum cost exposure. The resulting mitigations are a combination of the amount of reserves necessary to offset higher than expected prices, and/or the amount of procurement necessary to offset the maximum cost exposure.

Pioneer uses Cost VaR as a point in time calculation for determining the maximum amount of funds likely to be spent or lost over a specific time period, at certain confidence levels. Cost VaR is defined as a single summary statistical measure of possible costs that are in excess of expected costs. The Cost VaR calculations considers the amount of uncovered load, the time period of market exposure, and utilizes the forward market curve and specific measures of market volatility to produce the amount of financial exposure.

Appropriate level of Rate Stabilization Reserves – Typical power industry criteria for established load serving entities, is to use the difference between the cost of uncovered load amount for the three to six highest demand months and a one-in-five, or a one-in-twenty, confidence level cost of uncovered load. Using the Cost VaR methodology to determine the funding needed for Rate Stabilization Reserves to protect against a one-in-twenty chance of adverse market conditions occurring continuously for a period of up to one year, based on lower levels of covered load results in a very conservative approach to protecting customer rates against power market volatility. The Rate Stabilization Reserve level is calculated by subtracting the twelve month Cost VaR of

¹ Based on current electric rates

² Reference: Pioneer Community Energy, Energy Risk Management Regulations, Appendix 8, Effective December 4, 2017

the expected cost of uncovered load, from the twelve month one-in-twenty confidence level (extremely adverse and sustained market conditions) cost of uncovered load.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
65%	65%	65%	55%	55%	55%	50%	50%	50%	50%	50%	50%

The target level of the Rate Stabilization Fund is \$6,500,000.

Use and Replenishment of Funds – After setting aside the funds necessary for Cash on Hand, net revenues should be allocated to Rate Stabilization Reserves. At least 5% of Gross Revenues should be allocated to building Rate Stabilization Reserves until the target reserve level is achieved. While the Cost VaR is continually being utilized in procurement risk analysis and mitigation, a Cost VaR should be done annually as part of the annual budget process. The amount derived from the Cost VaR methodology shall determine the updated Rate Stabilization Fund amount. At least 5% of revenues shall be allocated in the annual budget to fund the Rate Stabilization Fund until the target funding level has been achieved. Additionally, as part of the year-accounting procedures and annual budget process, consideration should be made for making additional contributions to the Rate Stabilization Fund out of budgetary fund balance to accelerate achieving full funding of the Rate Stabilization Fund.

Annual Budgetary Fund Balance

Scope and purpose – Annual Budgetary Fund Balance is the amount remaining after Expenditures, Debt Service and Contributions to Reserves have been subtracted from Gross Revenues.

Appropriate fund balance level – As a part of the annual budget process, Budgetary Fund Balance trends should be analyzed. A moderate amount of Budgetary Fund Balance is an indicator of conservative budgeting practices and ensures against deficits and structural imbalances. Large amounts of Budgetary Fund Balance should be evaluated to ensure prudent use of resources and commensurate benefits.

Use and replenishment of funds – Moderate amounts of Budgetary Fund Balance should be generated annually as an indicator and cushion to ensure conservative budgeting. Budgetary Fund Balances should be utilized, first to increase reserves to target levels, second on one-time expenditures, and lastly held as additional reserves, rolled over into the following fiscal year. Fund balance should not be used to initiate new ongoing programs, with the exception of pilot programs with specific levels of funding and limited duration. Trend analysis and projections of Budgetary Fund Balance should be used to determine the financial viability and sustainability of new, on-going programs as part of the annual budget process.



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Silicon Valley Clean Energy ERMP



Energy Risk Management Policy



May 10, 2017

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1 Overview

Silicon Valley Clean Energy's (SVCE) Energy Risk Management (ERM) policies and procedures is a comprehensive framework to manage the strategic, operational, regulatory and reporting risks associated with the acquisition of power supply. SVCE's ERM Policy and related framework sets out a methodology and process for identifying risks, defining responsibilities, and establishing controls and procedures for reporting on risks and results against metrics to the SVCE Risk Oversight Committee and appropriate SVCE staff and management.

ERM encompasses the implementation of cost-effective controls and contingency plans with the intent of exceeding goals and objectives subject to approved risk tolerances, including the minimization of costs and liabilities.

The SVCE Board is responsible for review of the ERM policies and procedures. Periodically, but no less than once every two years, the Board is responsible for verifying that any updates to the ERM policies and procedures are consistent with SVCE's mission and risk tolerance, as well as those that may be required to address industry and regulatory changes.

The ERM Risk Oversight Committee is responsible for establishing and reviewing SVCE's risk tolerance, reviewing risk exposures, adequacy of controls and reporting mechanisms, limit breaches, and financial adequacy to support trading objectives. In addition, the ERM Risk Oversight Committee is responsible for attesting to the adequacy of procedures and controls required to comply with outside entities' rules, regulations and requirements for risk monitoring and control. The ERM Risk Oversight Committee also reviews all major strategies and positions for their impact on the risks facing SVCE.

The Trading Group (Front Office) is responsible for developing and implementing strategies designed to fill SVCE's Net Open Position (NOP), while comporting to boundaries and limits established by the trading and credit policies. NOP is based on forward forecasts of load and supply volumes over a future period (next month, next quarter, next year and beyond) and the value at risk for the unhedged open position based on forward price curves and volatility.

The Front Office is also responsible for complying with all controls and procedures including the capture of executed transactions, notifying the Middle Office of market trends, and changes to market rules or procedures that affect market dynamics. Finally, the Front Office is tasked with immediately reporting to the Middle Office discrepancies or deviations from accepted practices, policies or procedures, including breaches of established trading and risk limits, unauthorized trading activities and failure of controls.

The Risk Group (Middle Office) is responsible for overseeing the risk management framework and reviewing the effectiveness of key mitigation strategies. This includes determining SVCE's NOP, value of the NOP relative to current market prices, costs and revenue relative to expected costs, contract performance, hedging effectiveness,

investigation of trade discrepancies, monitoring risk limits and ensuring that trades can be tracked from cradle to grave. The Middle Office conducts quarterly reviews to ensure that emerging risks, such as those from changes in market structure and design, organizational restructures and operational issues, are identified and responses are developed.

The Settlement Group (Back Office) is responsible for ensuring that trades executed by the Front Office are settled in accordance with the terms and conditions of the contract and payment of invoices and receipt are consistent with timing specified by the governing documents. The Back Office is also responsible for ensuring that trades captured by the Front Office are transferred correctly to the settlement system. Finally, the Back Office is responsible for providing feedback to the Front Office of other charges or payments that affect the value of the trading strategy and monitoring changes in rules, regulations and procedures that affect the value of trading strategies.

2 Energy Risk Management Objective

SVCE is committed to providing competitively priced power to its customers, serving the following objectives:

- Maintaining risk within desired tolerances for a defined period in the future
- Participating in the energy markets primarily for hedging purposes, while taking advantage of market opportunities within defined policy limits
- Mitigating the effect of price volatility to its customers
- Maintaining stable cash flow

3 Governance Structure Roles and Responsibilities

3.1 SVCE Board

The SVCE Board consists of the following representatives:

- | | |
|-------------------|----------------------|
| • Campbell | • Monte Sereno |
| • Cupertino | • Morgan Hill |
| • Gilroy | • Mountain View |
| • Los Altos | • Santa Clara County |
| • Los Altos Hills | • Saratoga |
| • Los Gatos | • Sunnyvale |

The SVCE Board is responsible for:

- Reviewing and approving ERM policies and procedures
- Annually affirming that the ERM policies reflect changes to SVCE's mission and risk tolerance
- Reviewing, and if warranted approving, participation in commodity markets and derivative instruments
- Establishing guidance by which counterparty credit limits are set and monitored, and delegating development and implementation to SVCE's Risk Oversight Committee

3.2 Risk Oversight Committee

The Risk Oversight Committee (ROC) is formed by SVCE's Chief Executive Officer to:

- Define and ensure that all transaction strategies are consistent with SVCE's risk tolerance
- Develop the framework for the Middle Office to develop risk management controls, practices and procedures that are sufficient to monitor and maintain potential loss of value and increased costs within acceptable tolerances
- Report risks, procurement activities and financial information to its SVCE Board of Directors

3.3 Front Office

The Trading Group (Front Office) is established to transact within the Western Electricity Coordinating Council (WECC) to satisfy SVCE's load obligations and resultant NOP.

The Front Office is responsible for transacting within limits established and authorized by the ROC, recording all transactions in the deal capture system and reporting activities to the Middle Office, including potential Risk Policy violations.

3.4 Middle Office

The Risk Group (Middle Office) is responsible for:

- Ensuring that SVCE's accounting, financial and treasury function, internal control, risk management and compliance systems satisfy the ERM policies
- Overseeing and monitoring the accountability process and the quality of internal and external reporting
- Reporting regularly to the ROC on each of its purposes and duties and notify the ROC immediately upon findings of discrepancies or breach of limits or procedures that are of material significance or have the potential to result in material significance
- Performing routine internal audits
- Not less than annually, reviewing Front Office resources, including qualifications, skills, experience, funding and equipment
- Developing and approving procedures consistent with this policy
- Ensuring that key risk profiles, material changes to the profiles, trends, emerging risks, and the risk management program are reported to the ROC
- Reviewing with the ROC the effectiveness of internal controls, compliance and risk management systems
- Reviewing the controls in place for unusual transactions and significant risk exposures
- Publishing a quarterly risk report that notifies the ROC of any issues of concern and requires an annual assurance from the ROC that effective risk management processes in relation to material business risks are in place

3.5 Back Office

The Settlement Group (Back Office) is responsible for:

- Settling transactions based on agreed upon terms and conditions specified by the agreement governing the transaction
- Receiving amounts owed and paying amounts due, and ensuring that collateral and postings are sufficient to allow the Front Office to effectively perform its functions
- Ensuring that trade details (price, location, product, tenor, counterparty) transacted by the Front Office and recorded by the trade capture system are accurately reflected in the settlement system and reporting any discrepancies to the Middle Office and if necessary, the ROC

4 Hedging

4.1 Hedging Policy and Objectives

SVCE's hedging policy is designed to satisfy the following objectives:

- Effectively identify and quantify financial and regulatory risks to SVCE
- Accurately monitor those risks
- Execute transactions to appropriately balance risk with minimizing cost and price stability to SVCE's customers
- Provide transparency of the procurement process as appropriate throughout the SVCE organization

4.2 Net Open Position (NOP) Definition and Assessment

The NOP is defined as the difference between demand obligations and supply relative to market prices over a forward period. The NOP is calculated consistent with Risk Management procedures with the following results:

- NOP capacity, energy, renewable portfolio standards (RPS) and carbon-free volumes by period from prompt month through the next five years
- Conversion of NOP to tradeable products (for example, on-peak and off-peak blocks)
- Expected dollar value of the NOP
- Forward price curves
- Volatility of forward prices
- Load obligation forecast in MW and MWh
- Supply expectation in MW and MWh

4.3 NOP Management

NOP is to be managed to ensure stable, competitive rates to SVCE customers. To achieve that goal, the management of the NOP requires a matching of supply with load at rates designed to minimize exposure to price volatility while ensuring compliance with RPS mandated volumes. NOP shall be closed consistent with percentages established in the ERM Policy over periods as shown below:

- Prompt month
- Prompt quarter
- Remaining quarters over the next 12 months (four quarters)
- Year after the next 12 months

- Next five years after the next 12 months

4.4 Measuring NOP

The Middle Office shall calculate SVCE's NOP based on the following criteria:

- Supply contracts expected delivery
- Failure rate of supply contracts
- Load forecast and customer acquisition/retention outlook
- Forward market prices
- Forward market price volatility
- Optionality of supply and demand contracts (dispatchability based on market prices)
- Contract tenor
- Contract delivery and customer load location
- RPS compliance period requirements
- Greenhouse gas allowances and obligations
- Type of revenue streams (fixed vs. floating)
- Type of contract costs (fixed vs. floating)

4.5 Monitoring NOP

Results of monitoring SVCE's NOP shall include the following:

- Volume in MWh, MW by standard on-peak and off-peak periods for the following periods:
 - Prompt month
 - Prompt quarter
 - Balance-of-year
 - Prompt calendar year
 - 2-5 years
- Value in dollars
- Impact to rates to SVCE customers
- Renewable Energy Certificates (RECs) by compliance period
- Greenhouse gas emissions-free energy volume

4.6 Closing NOP

There are two processes for closing SVCE's NOP: the first is a result of the NOP being out of tolerance; the second is implementing a hedging strategy to maintain the NOP within tolerances.

Transactions to bring the NOP into tolerance shall be executed by the Front Office as soon as practical upon notification from the Middle Office. The Front Office shall notify the Middle Office that the transactions have been executed no later than the close of business on the day that the transactions were executed.

Transactions that are executed as a result of strategies designed to maintain the NOP within tolerances shall be consistent with the strategies. The resultant NOP shall be

updated to reflect the new transactions as soon as practical but no later than the next business day.

NOP energy tolerances shall be set at the following:

Period	Minimum Tolerance	Maximum Tolerance	Obligation
Prompt month	90% of load	105% of load	n/a
Prompt quarter	85% of load	105% of load	n/a
Balance-of-year	85% of load	105% of load	n/a
Prompt calendar year	80% of load	105% of load	n/a
Second calendar year	70% of load	90% of load	n/a
Third calendar year	55% of load	75% of load	n/a
Fourth calendar year	40% of load	60% of load	n/a
Fifth calendar year	0% of load	50% of load	n/a

NOP RPS tolerances shall be set at the following:

Period	Minimum Tolerance	Maximum Tolerance	Obligation
January 1, 2017 to December 31, 2017	90% of forecast	110% of forecast	25% of 2017 of retail sales
January 1, 2018 to December 31, 2018	80% of forecast	100% of forecast	25% of 2017 and 2018 retail sales
January 1, 2019 to December 31, 2019	70% of forecast	90% of forecast	25% of 2017 through 2019 retail sales
January 1, 2020 to December 31, 2020	55% of forecast	75% of forecast	25% of 2017 through 2019 retail sales + 33% of 2020 retail sales
Post 2020	40% of forecast	60% of forecast	33% of retail sales

NOP Capacity tolerances shall, at a minimum, be set at the following:

Period	Minimum Tolerance	Maximum Tolerance	Obligation
Prompt month +1	100% of req'd	100% of req'd	115% of peak load
Prompt month +2	100% of req'd	100% of req'd	115% of peak load
Prompt quarter	100% of req'd	100% of req'd	115% of peak load
Balance-of-year	75% of req'd system and flex; 100% of req'd local	100% of req'd	115% of peak load
Prompt calendar year (as of August)	50% of req'd	90% of req'd	n/a
Prompt calendar year (as of October)	75% of req'd system and flex; 100% of req'd local	100% of req'd	103.5 % of summer months peak load for system and flexible capacity; 100% of obligation for local
Post Prompt Year	0% of req'd	50% of req'd	n/a

5 Authorized Transaction and Trading Limitation

5.1 Energy Trading and Authority Policy Objectives

SVCE's Energy Trading and Authority (ETA) policy is designed to satisfy the following objectives:

- Ensure that market participation is consistent with SVCE's customer needs
- Provide SVCE with viable market tools with which to transact without exposing SVCE to undue risk
- Provide SVCE's traders and origination team with structure upon which to transact
- Ensure that agreements that govern transactions and allow for trading are suitable for transacting and do not expose SVCE to undue risk

5.2 Trader and Origination Team Authorization Process

The Front Office shall request that the Middle Office begin the trader authorization process. The Middle Office shall verify that the trader's background is consistent with the criteria established by the ERM Risk Oversight Committee. Criteria shall consist of the following:

- Trader name
- Experience
- Verification that trader is not currently under investigation for market manipulation
- Verification that trader has not been previously investigated for market manipulation
- Verification that trader has read and understands SVCE's trader policies regarding closing SVCE's NOP, and prohibition of speculation and market manipulation

Once the trader is authorized to transact on behalf of SVCE, the Middle Office shall then notify the Front and Middle Offices of that decision. The Middle Office shall add the trader to the trade capture system with the appropriate limits and authorizations. The Middle Office shall maintain documentation indicating SVCE's authorized traders, origination team members along with markets, trading instruments and term for which they are approved.

5.3 Approved Market Participation

Approved markets in which SVCE authorized traders and origination team members can participate are as follows:

- Bilateral energy and capacity within the WECC
- Bilateral renewable energy within the WECC
- Bilateral transmission and associated services within the WECC
- Bilateral carbon and emissions within California
- California Air Resources Board (CARB) emissions/carbon auctions
- Bilateral financial energy
- California Independent System Operator (CAISO)

- Day-Ahead energy and ancillary services
- Real-Time energy and ancillary services
- Congestion Revenue Rights (CRRs)
- Virtual bidding

5.4 Trading Instruments

Approved trading instruments in which SVCE authorized traders and origination team members can utilize are as follows:

- Physical energy, capacity and transmission transactions
- CAISO energy, ancillary services, inter-scheduling coordinator trades (ISTs), CRRs and virtual bidding
- Financial energy fixed-for-floating swaps
- Financial contracts-for-differences
- Basis transactions
- Greenhouse gas emissions allowances
- Renewable Energy Certificates (RECs)
 - Portfolio Compliance Category 1 (PCC1)
 - PCC2
 - PCC3

5.5 Enabling Agreements

Approved enabling agreements under which SVCE transactions are governed are as follows:

- Western System Power Pool (WSPP)
- Edison Electric Institute (EEI)
- CAISO Tariff
- Individual Power Purchase Agreements approved by the SVCE Board of Directors

5.6 Authorized Trading Limits

The table below lists authorized trading limits for personnel authorized to transact on behalf of SVCE¹.

¹ Note that except for CRRs and Convergence Bids, all limits are expressed in notional value of the contract, that is price times quantity. For example, 5 MWh x \$20/MWh is a notional value equal to \$100. CRRs and Convergence Bids are expressed in Value at Risk, that is the amount that the value of the CRR can expected to vary within a confidence interval. The confidence interval for CRRs and Convergence bids is 95%.

			Purchases		Sales	
Product	Transaction Horizon	Transaction Length	\$ Limit (Authorized Personnel)	MW Limit (Authorized Personnel)	\$ Limit (Authorized Personnel)	MW Limit (Authorized Personnel)
Energy	Real-Time	Balance-of-period until next unscheduled Day-Ahead Period	Amount necessary to balance SVCE load and resources	Amount necessary to balance SVCE load and resources	Amount necessary to balance SVCE load and resources	Amount necessary to balance SVCE load and resources
Capacity						
Transmission						
Financial Energy						
Energy	Day-Ahead	Balance-of-period until next unscheduled Day-Ahead Period	Amount necessary to balance SVCE load and resources	Amount necessary to balance SVCE load and resources	Amount necessary to balance SVCE load and resources	Amount necessary to balance SVCE load and resources
Capacity						
Transmission						
Financial Energy						
Energy	Balance-of-Month	Next unscheduled Day-Ahead Period until end of current month	\$5,000,000	100	\$2,500,000	50
Capacity						
Transmission						
Financial Energy						
Energy	Prompt Month	One Month	\$7,500,000	200	\$2,000,000	50
Capacity						
Transmission						
Financial Energy						
Energy	Balance-of-Year	One Year	\$25,000,000	250	\$6,250,000	50
Capacity						
Transmission						
Financial Energy						
Energy	Current Month through 36 Months	Three Years	Approval Required by SVCE CEO	Approval Required by SVCE CEO	Approval Required by SVCE CEO	Approval Required by SVCE CEO
Capacity						
Transmission						
Financial Energy						
Energy	Current Month through 60 Months	Five Years	Approval Required by SVCE CEO	Approval Required by SVCE CEO	Approval Required by SVCE CEO	Approval Required by SVCE CEO
Capacity						
Transmission						
Financial Energy						
CAISO Energy	Real-Time and Day-Ahead	Through Next CAISO Day-Ahead Period	Amount necessary to schedule SVCE load and resources	Amount necessary to schedule SVCE load and resources	Amount necessary to schedule SVCE load and resources	Amount necessary to schedule SVCE load and resources
CAISO Ancillary Services						
CAISO Convergence Bids	Day-Ahead	24 Hours	\$0	0	\$0	0
CAISO CRRs	Month	1 Month	\$5,000,000	1,000 MW per on-peak and off-period	N/A	N/A
	Quarter	3 Months	\$15,000,000	1,000 MW per on-peak and off-period		
	Year	1 Year	Approval Required by SVCE CEO	Approval Required by SVCE CEO		
	Long Term	Up to 10 Years				

6 Counterparty Credit

6.1 Credit Risk Policy Objective

SVCE's Energy Credit Risk policy is designed to satisfy the following objectives:

- Ensure that counterparty risk is recognized and managed to prevent financial loss and regulatory noncompliance due to nonperformance
- Provide SVCE with a broad range of viable counterparties
- Provide SVCE with enough counterparty diversity to obtain market-representative products, prices and location

6.2 Credit Authorization Process

For each potential new counterparty, the Middle Office will develop a counterparty credit template that will be used as the basis for vetting the counterparty's suitability for transacting with SVCE. The counterparty credit template shall consist of the following:

- Counterparty name
- Investment grade
- Financial measures such as assets-to-liability ratio and debt-to-equity ratio
- Organization's size (personnel, assets, dollars)
- Payment history
- Reputation in industry
- Depth of resources
- Enabling agreement type (WSPP, EEI, or custom)
- Litigations in progress and concluded
- Government entity
- Counterparty limits as described in Section 6.5 below (if counterparty is approved)

Once the credit template is completed, the Middle Office is responsible for determining whether the counterparty is suitable for transacting with SVCE and if so, corresponding limits and collateral if necessary. The Middle Office shall then notify the Front and Middle Offices of their determination. For approved counterparties, the Middle Office shall add the counterparty to the trade capture system with the appropriate limits.

6.3 Counterparty Credit Limits

Counterparty credit limits that are entered in the trade capture system and monitored are as follows:

- Total dollars owed or are owed
- Total volume sold or purchased (MW and MWh) remaining to be delivered or received
- Total dollar value of transaction
- Total transaction volume sold or purchased (MW and MWh)
- Percentage of dollars owed or are owed relative to all counterparties

- Percentage of volume sold or purchased relative to all counterparties

Prior to entering into any new transaction, the effect of the potential transaction shall be incorporated to ensure that limits prescribed to the potential counterparty shall not be breached. If any of the limits are breached, the transaction shall not be executed.

6.4 Counterparty Credit Monitoring

Counterparty credit monitoring shall be originated using the counterparty credit monitoring template. All pertinent information shall be included and updated using the counterparty credit template. The counterparty credit template shall be used by Middle Office personnel to enter relevant information into the trade capture system for tracking against transactions and settlements.

The transaction capture system shall compare the effect of potential transactions prior to executing a transaction. Transactions that are within limits can then be executed. Transactions that exceed limits shall not be executed.

6.5 Counterparty Credit Limit Exceedances

Counterparty credit limit exceedances shall result in immediate suspension of trading with that specific counterparty. Should that occur, the following actions to remedy shall be performed:

- No new transactions shall be executed with the affected counterparty
- Middle Office shall be notified immediately
- Middle Office shall investigate and identify the root cause of the exceedance
- Middle Office shall notify the ERM Risk Oversight Committee
- The exceedance shall be rectified as soon as possible via actions recommended by the Middle Office and reviewed by the ERM Risk Oversight Committee
- A comprehensive report shall be developed by the Middle Office and provided to the ERM Risk Oversight Committee and subsequently the SVCE Board of Directors

7 Reporting

As described in the ERM procedures, the Middle Office will develop reports to provide feedback to the SVCE Risk Oversight Committee regarding NOP management, risk management and pertinent issues affecting SVCE. They will also develop reports for the Front Office to state how well the contracts and transactions performed relative to expectations. At a minimum, reports shall consist of the following:

- Summary of energy risk management meetings
- NOP summary
 - NOP by period and type (energy, capacity, RPS, and carbon-free)
 - Value of NOP in dollars
 - Transactions executed and resultant change to NOP during the month
 - Strategies for closing NOP
 - Transactions that were required to close NOP as a result of tolerance exceedance

- Result of transactions on NOP
- Contract performance
- Summary of new transactions
- Financial report (costs and revenues associated with load obligations, contracts, resources and resultant NOP)
- Identification of violations of the Risk Policy along with mitigation measures
- Counterparty summary
 - List of counterparties
 - Credit limits (approved values)
 - Current dollar and volume amounts and remaining limits
 - Current credit rating
 - Total dollar value and quantity of transaction by counterparty
 - Ratio of contract value per counterparty to all contracts
 - Transactions that exceeded limits
 - Counterparty
 - Transaction type
 - Dollar amount of transaction
 - Quantity of transaction
 - Limit that was exceeded
 - Root cause of exceedance
 - Resolution
- RPS status
- Transaction Summary Report (quarterly or as requested by CEO to Risk Oversight Committee)
 - List of transactions
 - Volume and dollar amounts of transactions
 - Types of transactions
 - Effect of transactions on NOP
- Exceptions (as requested by CEO to Risk Oversight Committee)
 - Transactions that exceeded limits
 - Counterparty
 - Transaction type
 - Dollar amount of transaction
 - Quantity of transaction
 - Limit that was exceeded
 - Root cause of exceedance
 - Resolution

Reviewed and Approved by:



Rob Rennie – Chair, Silicon Valley Clean Energy Authority Board of Directors

5/12/17

Date

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COMMUNITY CHOICE
P A R T N E R S
SECURING YOUR COMMUNITY'S ENERGY FUTURE

Redwood Coast Energy Authority ERMP





REDWOOD COAST
EnergyAuthority

Energy Risk Management Policy

**Adopted December 12, 2016, Resolution 2016-6
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Section 1: POLICY OVERVIEW

1.1 Background and Purpose

The Redwood Coast Energy Authority (“RCEA”) is a public joint powers agency located within the geographic boundaries of Humboldt County. Member agencies of RCEA include the eight (8) incorporated cities located in Humboldt County, the County of Humboldt and the Humboldt Bay Municipal Water District. RCEA members desire to implement and administer a community choice aggregation (“CCA”) program for members that elect to become participants. The CCA program will give its members an opportunity to join together to procure electricity supplies and implement local programs that meet the goals of the local community. Electricity procured to serve customers will continue to be delivered over PG&E’s transmission and distribution system.

Presently, RCEA’s CCA Members include the following local government entities:

- Unincorporated Humboldt County
- City of Arcata
- City of Blue Lake
- City of Eureka
- City of Ferndale
- City of Fortuna
- City of Trinidad
- City of Rio Dell

Providing retail electric generation service to customers enrolled in the CCA program exposes RCEA to risks such as retail load uncertainty (due to weather, customer opt-out, and other factors), energy market price, counterparty credit, PG&E generation and PCIA rate competitiveness and other regulatory risks.

This Energy Risk Management Policy (“Policy”) establishes RCEA’s Energy Risk Management Program (“Program”) including risk management functions and procedures to manage the risks associated with power procurement activities.

The ultimate purpose of this Policy is to help RCEA increase the likelihood of achieving its goals by specifying management responsibilities, organizational structures, risk management standards, and operating controls and limits necessary to properly identify and manage RCEA’s exposure to risk.

1.2 Scope

Unless otherwise explicitly stated in this Policy, or other policies approved by the Board, this Policy applies to all power procurement and related business activities that may impact the risk profile of RCEA. This Policy documents the framework by which management, staff and The Energy Authority (TEA) will:

- Identify and quantify risk
- Develop and execute procurement strategies
- Create a framework of controls and oversight
- Monitor, measure and report on the effectiveness of the Program

To ensure successful operation of the CCA program, RCEA has partnered with experienced contractors to provide energy-related services. Specific to power procurement, RCEA has partnered with TEA. At the outset of the CCA Program, TEA will be executing the preponderance of front- (transacting), middle- (monitoring) and back-office (settlement) related activities on RCEA's behalf. In providing these services, TEA will observe the policies outlined in this document. TEA maintains its own risk policies and procedures, following industry practices of segregation of duties, which will also govern activities executed on RCEA's behalf.

1.3 Energy Risk Management Objective

The objective of the Energy Risk Management Policy is to provide a framework for conducting procurement activities that maximizes the probability of RCEA meeting the goals listed in Section 2.1.

Pursuant to this Policy, RCEA will identify and measure the magnitude of the risks to which it is exposed and that contribute to the potential for not meeting identified goals.

1.4 Policy Administration

This Policy document has been reviewed and approved by the RCEA Board of Directors ("Board"). The Risk Management Team ("RMT") and Board must approve amendments to this Policy, except for the appendices, which may be amended with approval of only the RMT. The RMT must give notice to the Board of any amendment it makes to an appendix or a reference policy or procedure document.

Section 2: GOALS AND RISK EXPOSURES

2.1 Policy Goals

To help ensure long term viability for the CCA, RCEA has outlined the following Policy Goals. These goals will establish metrics used for modeling and measuring risk exposures of the CCA.

- RCEA will target to maintain competitive retail rates with PG&E after adjusting for the PCIA and Franchise Fee.
- RCEA will target during the initial years of operation to fund financial reserves with the following objectives:
 - Establish long-term business sustainability
 - Build collateral for power procurement activities
 - Establish an investment grade credit rating
 - Develop a source of funds for investment in generation and other local programs
 - Stabilize rates and dampen year-to-year variability in procurement costs

The goals outlined above are incorporated into the financial models that are used in modeling and measuring risk exposures. It is important to note that the goals listed above are not intended to be a comprehensive list of goals for the CCA. Rather, the above reflect a subset of program goals that are critical to long-term business viability for the CCA.

2.2 Risk Exposures

The Program faces a range of risks during launch and ongoing operation:

- Customer Opt-Out risk
- Market risk
- Regulatory risk
- Volumetric risk
- Model risk
- Operational risk
- Counterparty credit risk
- Reputation risk

Customer Opt-Out Risk

Customer opt-out risk is the primary risk the CCA faces. Customer opt-out risk includes any condition or event that creates uncertainty in the CCA's customer base, thereby increasing the potential for the CCA to not meet its Policy goals. A CCA faces other risks, but the ultimate concern is often how these other risks will affect customer opt-outs. This Policy addresses this paramount risk and secondary risk types listed below. These risks are not all inclusive but are identified as the risk factors driving the success of the CCA.

The most relevant measures of the success of this Policy include:

- Retail rate competitiveness with PG&E
- Financial reserve level

For the purpose of this Policy, risk exposure is assessed on all the transactions (energy, environmental attributes, capacity, etc.) executed by TEA on behalf of RCEA, or by RCEA, as well as the risk exposure of open positions and the impacts of these uncertainties on the CCA's load obligations. The following are components of RCEA's energy risk that will be assessed, monitored and managed.

2.3.1 Market Risk

Market risk is the uncertainty of RCEA's financial performance due to variable commodity market prices (market price risk) and uncertain price relationships (basis risk). Variability in market prices creates uncertainty in RCEA's procurement costs and can materially impact RCEA's financial position. Market risk is managed by regular measurement, execution of approved procurement and Congestion Revenue Right strategies and the limit structure set forth in this Policy.

2.3.2 Regulatory Risk

CCAs remain a comparatively new legal entity in the state of California and are subject to an evolving legal and regulatory landscape. Additionally, CCA's are in direct competition with California's Investor Owned Utilities ("IOUs"), which face the risk of stranded investments in generating assets and power purchase agreements procured in the past to serve now departing CCA loads. The manner in which the stranded costs of these legacy power supplies is allocated to departing CCA loads is the subject of regulatory proceedings at the CPUC. The competitive and regulatory landscape results in retail rate competitiveness risks that are unique to CCAs. RCEA will manage regulatory risk by:

- Regular monitoring and analysis of legislative and regulatory proceedings impacting CCAs;
- Regular monitoring and reporting of actual and projected financial results including probability-based and stressed financial results assuming a range of market and retail rate scenarios (both RCEA and PG&E);
- Structuring procurement strategies with the objective function of maintaining a favorable retail rate savings relative to PG&E;
- Actively participating in and representing CCA customer interests during regulatory and legislative proceedings.

2.3.3 Volumetric Risk

Volumetric risk is the uncertainty of RCEA's financial performance due to variability in the quantity of retail load served by RCEA. Retail load uncertainty results from customer opt-outs, temperature deviation from normal, unforeseen adoption of behind the meter generation by RCEA customers, as well as local, state and national economic conditions. Volume risk is managed by taking steps to:

- Quantify anticipated PG&E generation and PCIA rates, and variability therein;
- Quantify variability in procurement costs;
- Monitor and adjust for non-regulatory factors driving volumetric uncertainty (e.g. weather);
- Adopt a formal procurement strategy;

- Implement a key accounts program and maintain strong relationships with the local community;
- Monitor trends in customer onsite generation, economic shifts, and other factors that affect electricity customer volume and composition;
- Expand the customer base of the CCA into neighboring counties and include direct access loads.

2.3.4 Model Risk

Model risk is the uncertainty of RCEA's financial performance due to potentially inaccurate or incomplete characterization of a transaction or power supply portfolio elements due to fundamental deficiencies in models and/or information systems. Model risk is managed by:

- TEA Risk Management Committee approval, and RCEA RMT ratification of, financial and risk models;
- Ongoing review of model outputs as part of controls framework;
- Ongoing RCEA and TEA staff education and participation in CCA industry forums;
- Ongoing update and improvement of models as additional information and expertise is acquired

2.3.5 Operational Risk

Operational risk is the uncertainty of RCEA's financial performance due to weaknesses in the quality, scope, content, or execution of human resources, technical resources, and/or operating procedures within RCEA. Operational risk can also be exacerbated by fraudulent actions by employees or third parties or inadequate or ineffective controls. Operational risk is managed through:

- The controls set forth in this Policy
- RMT oversight of procurement activity
- Timely and effective management reporting
- Staff resources, expertise and/or training reinforcing a culture of compliance
- Ongoing and timely internal and external audits

2.3.6 Counterparty Credit Risk

Counterparty credit risk is the potential that a Counterparty will fail to perform or meet its obligations in accordance with terms agreed to under contract. RCEA's exposure to counterparty credit risk is controlled by the limit controls set forth in the Credit Policy described in Section 6.

2.3.7 Reputation Risk

Reputation risk is the potential that the CCA's reputation is harmed, causing customers to opt-out of the CCA's service and migrate back to PG&E. Reputational risk is managed through:

- Implementation and adherence to this Energy Risk Management Policy
- Establishment and adherence to industry best practices including both those adopted by other CCAs, as well as those adopted by traditional municipal electric utilities.

2.4 Risk Measurement Methodology

A vital element in RCEA's Energy Risk Management Policy is the regular identification, measurement and communication of risk. To effectively communicate risk, all risk management activities must be monitored on a frequent basis using risk measurement methodologies that quantify the risks associated with RCEA's procurement-related business activities and performance relative to goals.

Risk measurement of RCEA's position will be performed using a method that calculates projected procurement costs on an annual basis at various probabilities and that further provides a comparison of projected RCEA retail rates to those of PG&E. The rate comparison will be adjusted for actual and projected PCIA and Franchise Fee charges. Risk measurement methodologies shall be re-evaluated on a periodic basis to ensure RCEA and TEA adjust their methods to reflect the evolving regulatory and competitive landscape. The implementation of these methods shall be overseen and validated by TEA and ratified by the RMT.

Section 3: BUSINESS PRACTICES

3.1 General Conduct

It is the policy of RCEA that all personnel, including the Board, management, and agents, adhere to standards of integrity, ethics, conflicts of interest, compliance with statutory law and regulations and other applicable RCEA standards of personal conduct while employed by or affiliated with RCEA.

3.2 Trading for Personal Accounts

All RCEA Directors, management, employees and agents participating in any transaction or activity within the coverage of this Policy are obligated to give notice in writing to RCEA of any interest such person has in any counterparty that seeks to do business with RCEA, and to identify any real or potential conflict of interest such person has or may have with regard to any contract or transaction with RCEA. Further all persons are prohibited from personally participating in any transaction or similar activity that is within the coverage of this Policy and that is directly or indirectly related to the trading of electricity and/or environmental attributes as a commodity.

If there is any doubt as to whether a prohibited condition exists, then it is the employee's responsibility to discuss the possible prohibited condition with her/his manager or supervisor.

3.3 Adherence to Statutory Requirements

Compliance is required with rules promulgated by the state of California, California Public Utilities Commission, California Energy Commission, Federal Energy Regulatory Commission (FERC), Commodity Futures Trading Commission (CFTC), and other regulatory agencies.

Congress, FERC and CFTC have enacted laws, regulations and rules that prohibit, among other things, any action or course of conduct that actually or potentially operates as a fraud or deceit upon any person in connection with the purchase or sale of electric energy or transmission services. These laws also prohibit any person or entity from making any untrue statement of fact or omitting to state a material fact where the omission would make a statement misleading. Violation of these laws can lead to both civil and criminal actions against the individual involved, as well as RCEA. This Policy is intended to comply with these laws, regulations and rules and to avoid improper conduct on the part of anyone employed by RCEA. These procedures may be modified from time to time by legal requirements, auditor recommendations, RMT requests and other considerations.

In the event of an investigation or inquiry by a regulatory agency, RCEA will provide legal counsel to employees. However, RCEA will not appoint legal counsel to an employee if RCEA's General Counsel and Executive Director determine that the employee was not acting in good faith within the scope of employment.

RCEA employees are prohibited from working for another power supplier, CCA or utility in a related position while they are simultaneously employed by RCEA unless an exception is authorized by the Board. For clarity, this prohibition is not intended to prevent RCEA staff from performing non-CCA activities on behalf RCEA in the normal course of its business.

3.4 Transaction Type, Regions and Markets

Authorized transaction types, regions and markets are listed in Appendix B to this Policy. These transaction types, regions and markets are and shall continue to be focused on supporting RCEA's financial policies, including approved procurement strategies. New or non-standard transaction types may provide RCEA with additional flexibility and opportunity but may also introduce new risks. Therefore, transaction types, regions and markets not included in Appendix B, or transactions within already approved transaction types that are substantially different from any prior transaction executed by RCEA, must be approved by the RMT prior to execution using the process defined below.

When seeking approval for a new or non-standard transaction type, region, and/or market, a New Transaction Approval Form, as shown in Appendix C, should be drafted describing all significant elements of the proposed transaction. The proposal write-up will be prepared by TEA and should, at a minimum, include:

- A description of the benefit to RCEA, including the purpose, function and expected impact on costs (i.e.; decrease costs, manage volatility, control variances, etc.)
- Identification of the in-house or external expertise that will manage and support the new or non-standard transaction type
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues
- How the exposures to the risks above will be managed by the limit structure
- Proposed valuation methodology (including pricing model, where appropriate)
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new transaction type
- Proposed accounting methodology
- Proposed work flows/methodology (including systems)

It is the responsibility of TEA's Middle Office to ensure that relevant departments have reviewed the proposed transaction and that material issues are resolved prior to submittal to the RMT for approval. If approved, Appendix B to the Policy will be updated to reflect the new transaction type.

3.5 Counterparty Suitability

TEA's counterparty credit limits and approval processes will govern counterparty suitability for all transactions executed by TEA on behalf of RCEA. TEA will provide a credit review and recommendation, consistent with the credit policies described in Section 6, for any counterparty with whom RCEA contracts directly.

3.6 System of Record

TEA's Middle Office will maintain a set of records for all transactions executed in association with RCEA procurement activities. The records will be maintained in US dollars and transactions will be separately recorded and categorized by type of transaction. This system of record shall be auditable.

3.7 Transaction Valuation

Transaction valuation and reporting of positions shall be based on objective, market-observed prices. Open positions should be valued (marked-to-market) daily, based on consistent valuation methods and data sources. Whenever possible, mark-to-market valuations should be based on independent, publicly available market information and data sources.

3.8 Stress Testing

In addition to limiting and measuring risk using the methods described herein, stress testing shall also be used to examine performance of the RCEA portfolio under adverse conditions. Stress testing is used to understand the potential variability in RCEA's projected procurement costs, and resulting retail rate impacts and competitive positioning, associated with low probability events. The TEA Middle Office will perform stress-testing of the portfolio on a monthly basis and distribute results.

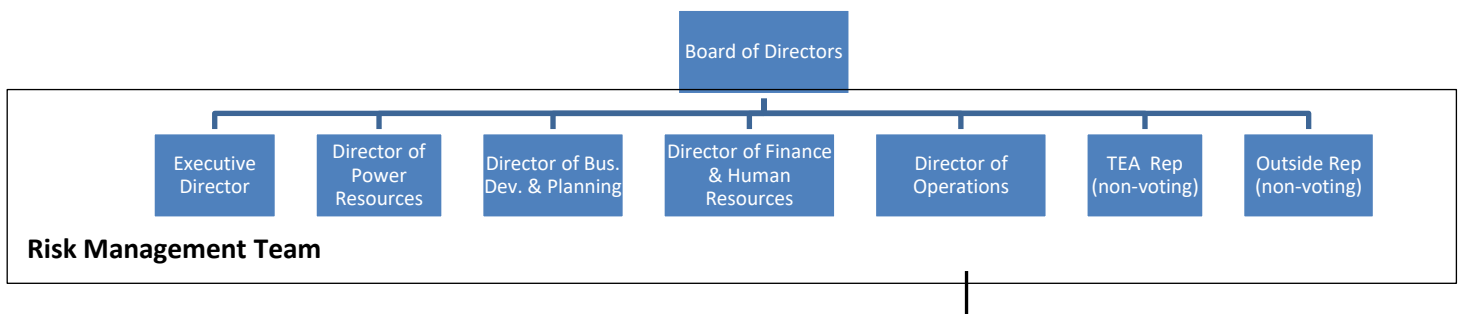
3.9 Trading Practices

It is the expressed intent of this Policy to prohibit the acquisition of risk beyond that encountered in the efficient optimization of RCEA's generation portfolio and execution of procurement strategies. As such, speculative transactions are prohibited. In the course of developing operating plans and conducting procurement activities, RCEA recognizes that expertise must be employed by TEA staff, and it is not the intent of this Policy to restrain the legitimate application of analysis and market expertise in executing procurement strategies intended to minimize costs within the constraints of this Policy. If any questions arise as to whether a particular transaction constitutes speculation, the RMT shall review the transaction(s) to determine whether the transaction would constitute speculation and document its finding in the meeting minutes.

Section 4: ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES

4.1 Risk Management Organizational Structure

Below is a high-level organization chart describing RCEA's risk management governance.



4.2 Board of Directors

The RCEA Board of Directors has the responsibility to review and approve this Policy. With this approval, the Board assumes responsibility for understanding the risks RCEA is exposed to due to CCA Program activity and how the policies outlined in this document help RCEA manage the associated risks. The Board of Directors is also responsible to:

- Determine RCEA strategic direction
- Understand the procurement strategy employed
- Approve risk exposures beyond the RMT's authority
- Approve voting Members of the RMT

4.3 Risk Management Team (RMT)

The RMT is responsible for implementing, maintaining and overseeing compliance of this Policy. The voting members of the RMT shall be Board-approved RCEA staff members. Additionally, an independent outside third-party representative, and a representative from TEA, will serve as non-voting members. Each voting member will be assigned one vote. The current voting members of the RMT are:

- Executive Director
- Director of Power Resources
- Director of Operations
- Director of Business Development and Planning
- Director of Finance and Human Resources

The primary goal of the RMT is to ensure that the procurement activities of RCEA are executed within the guidelines of this Policy and are consistent with Board directives. The RMT is also responsible to consider and propose recommendations to this Policy when conditions dictate.

Pursuant to direction from the Board of Directors and the limitations specified by this Policy, the RMT and the Executive Director maintain full authority over all procurement activities for RCEA. This authority includes, but is not limited to, taking any or all actions necessary to ensure compliance with this Policy.

The RMT is responsible for overseeing implementation of this Policy, procurement strategies, and the adoption of new product types. The RMT is also responsible for ensuring procurement strategies are consistent with RCEA's strategic objectives and for reviewing financial results. The RMT shall meet at least quarterly and record business in meeting minutes that will be approved by the RMT. No decision of the RMT is valid unless a majority of voting members has stated approval with a quorum of voting members participating in the vote, including the Executive Director. All decisions by the RMT, other than those made by common consent, shall be made by simple majority vote of the RMT members with the Executive Director having veto authority.

The RMT maintains the authority and responsibility to:

- Approve and ensure that all procurement strategies are consistent with this Policy;
- Determine if changes in procurement strategies are warranted;
- Approve new transaction types, regions, markets and delivery points;
- Understand financial and risk models used by TEA;
- Understand counterparty credit review models and methods for setting and monitoring credit limits;
- Receive and review reports as described in this Policy;
- Meet to review actual and projected financial results and potential risks;
- Escalate to the Board of Directors with any risks beyond the RMT's authority;
- Review summaries of limit violations;
- Review the effectiveness of RCEA's energy risk measurement methods;
- Maintain this Policy;
- Monitor regulatory and legislative activities

4.4 Power Manager

The CCA has partnered with TEA as its Power Manager. TEA, as outlined in its Risk Policy, maintains a strong segregation of duties, also referred to as "separation of function" that is fundamental to manage and control the risks outlined in this Policy. The Power Manager will provide education to the RMT on the risk and credit models, methods and processes that it uses to fulfill its obligations under this Policy. Individuals responsible for legally binding the CCA to a transaction will not also perform confirmation, or settlement functions. With this in mind, TEA's responsibilities are divided into front-middle-back office activities, as described below.

4.4.1 Power Manager - Front Office

The Power Manager's Front Office has overall responsibility for (1) managing all commodity and transmission activities related to procuring and delivering resources needed to serve CCA's load, (2) the analysis of fundamentals affecting load and supply factors that determine CCA's net position, and (3) transacting within the limits of this Policy, and associated policies, to balance loads and resources, and

maximize the value of CCA's assets through the exercise of approved optimization strategies. Other duties associated with these responsibilities include:

- a. Assist in the development and analysis of risk management hedging products and strategies, and bring recommendations to the RMT
- b. Prepare each month a monthly operating plan for the prompt months that gives direction to the day-ahead and real-time trading and scheduling staff regarding the bidding and scheduling of CCA's resource portfolio in the CAISO market
- c. Develop, price and negotiate hedging products
- d. Forecast day-ahead and monitor/ forecast same-day loads
- e. Keep accurate records of all transactions they enter

4.4.2 Power Manager – Middle/Back Office

The Power Manager Middle Office provides independent market and credit risk oversight. The Power Manager Middle Office is functionally and organizationally separate from the Front Office. The Power Manager Back Office provides support with a wide range of administrative activities necessary to execute and settle transactions and to support the risk control efforts (e.g. transaction entry and/or checking, data collection, billing, etc.) consistent with this Policy. The Power Manager Back Office is functionally and organizationally separate from the Front Office.

The Power Manager's Middle and Back Offices have primary responsibility for trading controls and for ensuring agreement with counterparties regarding the terms of all trades, including forward trading. The Power Manager has the primary responsibility for:

- a. Estimating and publishing daily forward monthly power and natural price curves for a minimum of the balance of the current year through the next calendar year
- b. Calculating and maintaining the net forward power positions of CCA
- c. Ensuring that CCA adheres to all risk policies and procedures of both CCA and the Power Manager in letter and in intent
- d. Maintaining the overall financial security of transactions undertaken by the Power Manager on behalf of CCA
- e. Implementing and enforcing credit policies and limits
- f. Handling confirmation of all transactions and reconciling differences with the trading counterparties
- g. Reviewing trade tickets for adherence to approved limits
- h. Ensuring all trades have been entered into the appropriate system of record
- i. Ensuring that both pre-schedule and actual delivery volumes and prices are entered into the physical database
- j. Carrying out month-end checkout of all transactions each month
- k. Reviewing models and methodologies and recommending RMT approval

Section 5: DELEGATION OF AUTHORITY

With the approval of the Policy, the RCEA Board is explicitly delegating operational control and oversight to the RMT and Power Manager, as outlined through this Policy. Specifically, to facilitate daily operations of the CCA, the Board is delegating transaction execution authorities shown in the table below.

Position	Maturity Limit	Term Limit	Volume Limit (MWh) ¹	Value Limit ²
Risk Management Team	30 Months	24 Months	500,000	\$2,000,000
Executive Director	24 Months	18 Months	375,000	\$1,000,000
TEA	18 months	12 Months	250,000	\$500,000

¹Volume limit applies only to energy purchases, including index-based renewable and carbon-free energy purchases.

²Value limits apply to non-energy product transactions (e.g., Resource Adequacy).

These authorities will be applied to wholesale power activity executed outside of the California Independent System Operator (“CAISO”) markets. These limits provide both RCEA and TEA needed authorities to manage risks as they arise. Transactions falling outside the delegations above require Board approval prior to execution. Activity with CAISO is excluded from this table due to the nature of the market, where prices for activity may not be known until after transactions are committed.

All procurement executed under the delegation above, must align with the RCEA’s underlying risk exposure (load requirements, locational and temporal) that is being hedged consistent with the approved **Procurement Strategy**.

5.2 Monitoring, Reporting and Instances of Exceeding Risk Limits

The TEA Middle Office is responsible for monitoring, and reporting compliance with, all limits within this Policy. If a limit or control is violated, the TEA Middle Office will send notification to the trader responsible for the violation and the RMT. The RMT will discuss the cause and potential remediation of the exceedance to determine next steps for curing the exceedance.

Section 6: CREDIT POLICY

During startup of the CCA, it is expected that transactions will be executed by TEA on TEA agreements, and with this activity RCEA is exposed to pass-through credit risk. As the CCA builds its own counterparty master trading agreements, transactions executed on CCA agreements will carry direct credit risk. For activity on TEA and/or CCA agreements, RCEA will adopt a scaling methodology to adjust TEA's credit limits to RCEA's risk tolerance. For scaling with RCEA counterparties, where an agreement exists between RCEA and an entity, the RMT will approve changes to credit limits, otherwise TEA will automatically scale the TEA limit to the RCEA risk tolerance.

All procurement activities executed by TEA on behalf of RCEA, using TEA's counterparty agreements, will be subject to the credit policies and procedures outlined in TEA's Energy Risk Management Policy. TEA's credit policy requires that all Counterparties be evaluated for creditworthiness by the TEA Middle Office prior to execution of any transaction and no less than annually thereafter. Additionally, Counterparties shall be reviewed if a change has occurred, or perceived to have occurred, in market conditions or in a company's management or financial condition. This evaluation, including any recommended increase or decrease to a credit limit, shall be documented in writing and includes all information supporting such evaluation in a credit file for the counterparty. A credit limit for a Counterparty will not be recommended, or approved without first confirming the Counterparty's senior unsecured or corporate credit rating from one of the nationally recognized rating agencies and/or performing a credit review or analysis of the Counterparty's or guarantor's financial statements. The TEA credit analysis shall include, at a minimum, current audited financial statements or other supplementary data that indicates financial strength commensurate with an investment grade rating. Trade and banking references, and any other pertinent information, may also be used in the review process.

Counterparties that do not qualify for a Credit Limit must post an acceptable form of credit support or Prepayment prior to the execution of any transaction. A Counterparty may choose to provide a guarantee from a third party, provided the third party satisfies the criteria for a Credit Limit as outlined in TEA's Energy Risk Management Policy.

6.1 Credit Limit and Monitoring

In executing transactions on RCEA's behalf, TEA will observe a pass-through counterparty credit maximum limit equal to \$1.0 million.

The TEA Middle Office will establish continuous monitoring of the current credit exposure for each Counterparty with whom TEA transacts on behalf of RCEA and include such information in the Current Counterparty Credit Risk Report. This report will be made available, reviewed and communicated to the RMT pursuant to the reporting requirements outlined in Section 7.

Section 7: POSITION TRACKING AND MANAGEMENT REPORTING

Minimum reporting requirements are shown below. The reports outlined below will be made available to RMT members and TEA staff:

- **Daily Financial Model Forecast**

Latest projected financial performance, marked to current market prices, and shown relative to financial goals.

- **Monthly Net Position Report**

Prepare a forward net position report, not less frequently than monthly, and report the results to the RMT.

- **Monthly Pass-through Counterparty Credit Exposure**

This report will show how the credit exposures for transactions that TEA executes on behalf of RCEA will pass-through TEA to RCEA.

- **Monthly Risk Analysis**

This will include a Cash Flow at Risk and stress test of financial forecast relative to financial goals.

- **Quarterly Board Report**

Update on activities and projected financial performance to be presented quarterly at RCEA Board meetings.

Section 8: POLICY REVISION PROCESS

RCEA's Energy Risk Management Policy will evolve over time as market and business factors change. At least on an annual basis, the RMT will review this Policy and associated procedures to determine if they should be amended, supplemented, or updated to account for changing business and/or regulatory requirements. If an amendment is warranted, the Policy amendment will be submitted to the RCEA Board for approval. Changes to appendices to this Policy may be approved and implemented by the RMT.

8.1 Acknowledgement of Policy

Any RCEA employee participating in any activity or transaction within the scope of this Policy shall sign, on an annual basis or upon any revision, a statement approved by the RMT that such employee has:

- Read RCEA's Energy Risk Management Policy
- Understands the terms and agreements of said Policy
- Will comply with said Policy
- Understands that any violation of said Policy shall be subject to employee discipline up to and including termination of employment.

8.2 Policy Interpretations

Questions about the interpretation of any matters of this Policy should be referred to the RMT.

All legal matters stemming from this Policy will be referred to General Counsel.

Appendix A: AUTHORIZED TRANSACTION TYPES, REGIONS AND MARKETS

All transaction types listed below must be executed within the limits set forth in this Policy. *(The following transaction types can be 'nonstandard' at RCEA subject to RMT approval)*

Over the Counter Products

- CAISO Market Products
 - Day-ahead and Real-time Energy
 - Congestion Revenue Rights
 - Convergence
 - Inter Scheduling Coordinator Transactions
 - Tagging into and out of CAISO
- Physical Power Products
 - Short and Long-Term Power
 - Physical OTC Options
- Physical Resource Adequacy Capacity
- Physical Environmental Products
 - Renewable Energy Credits
 - Specified Source Power
 - Carbon Allowances and Obligations

The point of delivery for all products must be at a location on the CAISO transmission grid.

Appendix B: NEW TRANSACTION APPROVAL FORM

New or Non-Standard Transaction Approval Form

Prepared By:

Date:

New or Non-Standard Transaction Name:

Business Rationale and Risk Assessment:

- Product description – including the purpose, function, expected impact on net revenues (i.e. increase, manage volatility, control variances, etc.) and/or benefit to RCEA
- Identification of the in-house or external expertise that will be relied upon to manage and support the new or non-standard transaction
- Assessment of the transaction's risks, including any material legal, tax or regulatory issues
- How the exposures to the risks above will be managed by the limit structure
- Proposed valuation methodology (including pricing model, where appropriate)
- Proposed reporting requirements, including any changes to existing procedures and system requirements necessary to support the new product
- Proposed accounting methodology
- Proposed Middle Office work flows/methodology, including systems
- Brief description of the responsibilities of various departments within RCEA who will have any manner of contact with the new or non-standard transaction

Reviewed by:

Director of Power Resources

Date

TEA Representative

Date

Executive Director

Date

Appendix C: DEFINITIONS

Back Office: That part of a trading organization which handles transaction accounting, confirmations, management reporting, and working capital management.

Bilateral Transaction: Any physical or financial transaction between two counterparties, neither of whom is an Exchange or market entity (e.g. MISO).

Cash Flow at Risk: A measure of the potential shortfall in cash flow from a specified level during a specified period of time at a specified confidence level. The CFaR of any Portfolio is equal to the Portfolio's current Mark-to-Market value less its Terminal Value.

CAISO: California Independent System Operator. CAISO operates a California bulk power transmission grid, administers the State's wholesale electricity markets, and provides reliability planning and generation dispatch.

CCA: Community Choice Aggregator. CCAs allow local government agencies such as cities and/or counties to purchase and/or develop generation supplies on behalf of their residents, businesses and municipal accounts.

CFTC: Commodity Futures Trading Commission. The CFTC is a U.S. federal agency that is responsible for regulating commodity futures and swap markets. Its goals include the promotion of competitive and efficient futures markets and the protection of investors against manipulation, abusive trade practices and fraud.

Commodity: A basic good used in commerce that is interchangeable with other commodities of the same type. Commodities are most often used as inputs in the production of other goods or services. The quality of a given commodity may differ slightly, but it is essentially uniform across producers. When they are traded on an exchange, commodities must also meet specified minimum standards, also known as a basis grade.

Confirmation Letter: A letter agreement between two counterparties that details the specific commercial terms (e.g., price, quantity and point of delivery) of a transaction.

Congestion Revenue Right: A point-to-point financial instrument in the Day-Ahead Energy Market that entitles the holder to receive compensation for or requires the holder to pay certain congestion related transmission charges that arise when the transmission system is congested.

Counterparty Credit Risk: The risk of financial loss resulting from a counterparty to a transaction failing to fulfill its obligations.

Day-ahead Market: The short term forward market for efficiently allocating transmission capacity and facilitating purchases and sales of energy and scheduled bilateral transactions; conducted by an Organized Market prior to the operating day.

Delivery point: the point at which a commodity will be delivered and received.

Departing load: A retail electricity consumer that elects to purchase generation services from an Energy Service provider rather than the local Investor Owned Utility.

FERC: Federal Energy Regulatory Commission. FERC is a federal agency that regulates the interstate transmission of electricity, natural gas and oil. FERC also reviews proposals to build liquefied natural gas terminals, interstate natural gas pipelines, as well as licenses hydroelectric generation projects.

Front Office: That part of a trading organization which solicits customer business, services existing customers, executes trades and ensures the physical delivery of commodities.

Franchise Fee: A franchise fee is a percentage of gross receipts that an IOU pays cities and counties for the right to use public streets to provide gas and electric service. The franchise fee surcharge is a percentage of the transmission (transportation) and generation costs to customers choosing to buy their energy from third parties. IOUs collect the surcharges and pass them through to cities and counties.

Hedging products: Hedging products means capacity, energy, renewable energy credits or other products related to a specific transaction.

Hedging Transaction: A transaction designed to reduce the exposure of a specific outstanding position or portfolio; “fully hedged” equates to complete elimination of the targeted risk and “partially hedged” implies a risk reduction of less than 100%.

IOU: An Investor Owned Utility (IOU) is a business organization providing electrical and/or natural gas services to both retail and wholesale consumers and is managed as a private enterprise.

Limit structure: A set of constraints that are intended to limit procurement activities.

Limit violation: Any time a defined limit is violated.

Middle Office: That part of a trading organization that measures and reports on market risks, develops risk management policies and monitors compliance with those policies, manages contract administration and credit, and keeps management and the Board informed on risk management issues.

Net Forward Position: A forecast of the anticipated electric demands of a load serving entity compared to existing resource (generation and/or power purchase agreements) commitments.

Nonstandard: Nonstandard refers to any product that is not commonly transacted among market participants in forward markets. The nonstandard attribute of the product could be a function of a number of factors such as volume, delivery period and/or term.

Opt-out Rate: Typically expressed as a percentage, the Opt-out Rate measures the ratio of eligible customers of a CCA that have elected to remain a bundled service customer of the IOU rather than take generation services from the CCA.

PCIA: Power Cost Indifference Adjustment. The PCIA is intended to compensate IOUs for their stranded costs when a bundled customer departs and begins taking generation services from a CCA.

Schedule: Schedule or Scheduling means the actions of the counterparts to a transaction, and/or their designated representatives, of notifying, requesting and confirming to each other the quantity and type of product to be delivered on a given day.

Separation of function: Separation of function, also referred to as “segregation of duties,” is part of a complete risk control framework. Individuals responsible for legally binding the organization to a transaction should not also perform confirmation, clearance or accounting functions. RCEA will maintain appropriate segregation of duties in its organization and activities.

Settlement: Settlement is the process by which counterparties agree on the dollar value and quantity of a commodity exchanged between them during a particular time interval.

Speculation: Speculation is the act of trading an asset with the expectation of realizing financial gain resulting from a change in price in the asset being transacted.

Stranded cost: Stranded costs commonly refer to generation costs that an IOU (although could be any load serving entity) is allowed to collect from customers through retail rates but that will not be recovered if the generation is sold in wholesale electricity markets.

Stress testing: Stress testing is the process of simulating different financial outcomes to assess potential impacts on projected financial results. Stress testing typically evaluates the effect of negative events to help inform what actions may be taken to lessen the negative consequences should such an event occur.



COMMUNITY CHOICE
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SECURING YOUR COMMUNITY'S ENERGY FUTURE

Peninsula Clean Energy Procurement Authority & CAISO CRR Controls





Policy Number: 15
Adoption Date:
December 14, 2017

Subject: Energy Supply Procurement Authority

Policy: "Energy Procurement" shall mean all contracting for energy and energy-related products for PCE, including but not limited to products related to electricity, capacity, energy efficiency, distributed energy resources, demand response, and storage. In Energy Procurement, Peninsula Clean Energy Authority will procure according to the following guidelines

- 1) **Short-Term Agreements:** Chief Executive Officer has authority to approve energy procurement contracts with terms of twelve (12) months or less. The CEO shall report all such agreements to the PCE board monthly.
- 2) **Medium-Term Agreements:** Chief Executive Officer, in consultation with the General Counsel, the Board Chair, and other members of the Board as CEO deems necessary, has the authority to approve energy procurement contracts with terms greater than twelve (12) months but not more than five (5) years. The CEO shall report all such agreements to the PCE board monthly.
- 3) **Intermediate and Long-Term Agreements:** Approval by the PCE Board is required before the CEO enters into energy procurement contracts with terms greater than five (5) years.



Policy Number: 7

Original Adoption Date:

October 27, 2016

Revised: February 23, 2017

Subject: Risk Management Procedures and Controls for Transactions in the Independent System Operator Markets

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1 Overview

This Risk Management Procedures and Controls for Transactions in the California Independent System Operator Markets (Risk Management Policy or RMP) establishes criteria and processes for transacting in the CAISO markets. The CAISO markets in which Peninsula Clean Energy (PCE) participates and to which these policies apply include the following:

- Congestion Revenue Rights

The Risk Management policy consists of the following components:

1. Roles and Responsibilities
2. Risk Exposure and Controls
3. Training
4. Monitoring and Reporting

2 Roles and Responsibilities

PCE's Risk Management Policy ensures appropriate segregation of responsibility for policy approval, valuation and reporting, and trading.

The PCE Governing Board is responsible for approving the Risk Management policy and procedures.

The Enterprise Risk Management (ERM) Oversight Committee is responsible for overseeing modifications to and implementation of PCE's CRR policy and processes.

The Trading Group (Front Office) is responsible for executing CRR transactions, consistent with this CRR policy. In addition, the Front Office is tasked with complying with all controls, limits and procedures and immediately reporting to the Middle Office discrepancies or deviations from accepted practices, policies or procedures, including breaches of established trading and risk limits, unauthorized trading activities and failure of controls.

The Risk Group (Middle Office) is responsible for valuing and monitoring PCE's CRR positions. The Middle Office is also responsible for providing CRR reports to the ERM Oversight Committee and, within 24 hours of discovery, notifying the ERM Oversight Committee of transactions that are inconsistent with this CRR policy.

The Settlement Group (Back Office) is responsible for verifying that trades executed by the Front Office are executed in compliance with this CRR policy. The Back Office is also responsible for immediately reporting to the Middle Office discrepancies or deviations from accepted practices, policies or procedures, including breaches of established trading and risk limits, unauthorized trading activities and failure of controls.

3 Risk Exposure and Controls

PCE uses CRRs for the purpose of hedging congestions costs associated with serving its retail load. PCE participates in the CAISO CRR allocation process to obtain CRRs that protect against and minimize congestion costs. CRR positions are limited to the Seasonal Eligible Quantity and Monthly Eligible Quantity caps as provided by the CAISO with all allocated CRRs sinking to PG&E DLAP or one of PG&E's corresponding SLAPs. All CRR transactions are executed and managed by PCE's Scheduling Coordinator, and confirmation of such transactions are provided to PCE personnel who are independent from the CRR trading function.

The table below lists authorized trading limits for personnel authorized to transact on behalf of PCE. The limits are expressed in terms of Value at Risk at the 95% confidence interval.

			Purchases	Sales		
Product	Transaction Horizon	Transaction Length	\$ Limit (Authorized Personnel)	MW Limit (Authorized Personnel)	\$ Limit (Authorized Personnel)	MW Limit (Authorized Personnel)
CAISO CRRs	Month	1 Month	\$1.0M	1,000MW	N/A	N/A
	Quarter	3 Months	\$3.0M	1,000MW		
	Year	1 Year	\$12.0M	1,000MW		
	Long Term	Up to 10 Years	Approval Required by PCE Board	Approval Required by PCE Board		

PCE's CRR policy addresses relevant risks as follows:

3.1 Credit Risk

Credit risk refers to the potential for non-payment or default by the counterparty to a transaction. PCE's CRRs are financially settled with the CAISO through PCE's Scheduling Coordinator. CRR credit risk is mitigated due to the credit policies and procedures in place at the CAISO and the credit provisions governing PCE's agreement with its Scheduling Coordinator.

3.2 Liquidity Risk

Liquidity risk refers to the potential inability of a party to close out a position at prevailing market prices due to a lack of buyers or sellers for the specific product being liquidated. PCE can liquidate its CRR positions by selling into the CAISO monthly and annual CRR auction markets. PCE's CRR position limits are small in relation to the overall market, and liquidation is unlikely to adversely impact market prices.

3.3 Market Risk

Market risk refers to potential cost exposure resulting from changes in market prices for the underlying commodity. CRRs have positive value when congestion exists between

the source and the sink associated with the CRR path such that locational marginal prices are lower at the sources than at the sink. CRRs have negative value when the opposite is true. PCE uses CRRs to hedge against congestion costs, which are negatively correlated with CRR values, such that the potential adverse financial impacts of changes in CRR values and congestion costs are mitigated. PCE intends to obtain Congestion Revenue Rights (CRRs) through the CRR allocation process with the initial objective of attaining an allocation of CRRs that have consistently cleared with positive value in both the day-ahead market and in the auctions.

4 Monitoring and Reporting

4.1 Monitoring

CRR values shall be monitored at regular intervals, with such intervals selected in consideration of the risk characteristics of PCE's CRR holdings, but no less frequently than monthly. CRR's shall be valued using prevailing industry practices including historical congestion analyses, forward pricing and volatility assessments, and auction clearing prices. PCE's Scheduling Coordinator will use its internal valuation systems to assess potential congestion and make recommendations to the Front Office for requesting CRRs in the monthly and annual allocation process. The Front Office shall enter all CRR transactions into a trade capture system, and the Back Office shall ensure that trade details recorded in the trade capture system are accurately reflected in the settlement system and shall report any discrepancies to the Middle Office and if necessary, the ERM Oversight Committee.

The value of PCE's CRR portfolio will be monitored by PCE Middle Office personnel using internal mark-to-market valuation models, run on a monthly basis. Value at Risk, or the amount that the value of the CRR can be expected to vary within a confidence interval) will be reported at the 95% Confidence interval. Changes in market value and Value at Risk shall be reported as set forth in 4.2. The Back Office will review and validate realized CRR value during the weekly settlement process, and include discrepancies relative to expected values, if any, in a weekly exception report.

PCE Middle Office personnel responsible for monitoring the value of PCE's CRR holdings shall be independent from those Front Office personnel engaged in transacting in the CAISO's CRR markets.

4.2 Reporting

CRR positions and market value shall be reported by the Middle Office on a monthly basis to the PCE Chief Executive Officer and Finance Director. Reports shall include current CRR positions, changes in CRR positions (volumes and dollar amounts) from the prior month, the realized value of PCE's CRR portfolio in the prior month, the estimated market value of PCE's CRR holdings, and Value at Risk. Any material change in such CRR values or risks, including credit, liquidity, and market risks, shall be identified and summarized in the aforementioned report.

On an interval appropriate to each specific CAISO market, but in no circumstance on less than a monthly basis, the Middle Office shall monitor all CAISO transactions for conformance to expected outcomes. To the extent the Middle Office identifies contingencies that are likely to result in an impact exceeding 5% of gross revenues, PCE shall report such contingencies and their proposed resolution to the ERM Oversight Committee. These contingencies shall include market value changes as well as consideration of credit risk and liquidity risk.

5 Training

PCE employees, contractors and agents transaction in CAISO markets shall meet all training requirements set forth in the CAISO Tariff, Business Practices, or applicable CAISO Operating Agreement. Further, all such personnel shall certify that they have read and understand this Risk Management policy and the delegations of authority before being authorized to transact on behalf of PCE.

Reviewed and Approved by:

Jan Pepper – Chief Executive Officer, Peninsula Clean Energy

Date

PCE Risk Management Policy Minimum Standards Documentation

The Market Participant's risk management framework is documented in a risk policy addressing market, credit, and liquidity risks that has been approved by the Market Participant's risk management governance function, which includes appropriate corporate persons or bodies that are independent of the Market Participant's trading functions, such as a risk management committee, a designated risk officer, a board or board committee, or a board or committee of the Market Participant's parent company;

- The Market Participant maintains an organizational structure with clearly defined roles and responsibilities that segregate front-, middle-, and back-office functions to as high a level as is practicable;

See RMP Section 2

- Delegations of authority specify the transactions in which traders are allowed to enter;

See RMP Section 3

- The Market Participant ensures that traders have adequate training and experience relative to their delegations of authority in systems and the markets in which they transact;

See RMP Section 5

- As appropriate, risk limits are in place to control risk exposures;

See RMP Section 3

- Reporting is in place to ensure risks are adequately communicated throughout the organization;

See RMP Section 4.2

- Processes are in place for independent confirmation of executed transactions; and

See RMP Section 2 (Back Office) and RMP Section 4.1

- As appropriate, there is periodic evaluation or mark-to-market of risk positions

See RMP Section 4.1



COMMUNITY CHOICE
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Sonoma Clean Power ERMP



Procurement Policy C.1

Risk Management

Sonoma Clean Power Authority (SCPA) provides retail electric service to customers enrolled in the Sonoma Clean Power program. In order to provide such service while meeting associated legal compliance obligations and furthering the purposes of the program, SCPA engages in several types of procurement activities for an array of energy-related products. The products may include those related to energy, capacity, ancillary services, energy transmission and others that may be defined through legislative and regulatory changes. Procurement activities may include competitive solicitations, bilateral negotiations, programmatic activities, project development and participation in various markets such as those run by the California Independent System Operator (CAISO).

As an agency that serves customer electric load, and manages a portfolio to perform this function, SCPA faces exposure to many types of risk, such as: forecast error, commodity price fluctuation, market liquidity, and counterparty credit. These risks directly impact overall procurement costs and the risk of adverse procurement cost changes.

SCPA shall implement processes that monitor and manage procurement cost risk consistent with utility industry practice, for the purpose of prudently balancing the dual objectives of cost minimization and protection against low-probability adverse cost movements. These objectives are frequently in conflict, as lowest cost procurement may be achieved by settling all transactions in spot markets and none through forward contracts, while the lowest risk portfolio may be achieved at prohibitively high cost.

Therefore, SCPA's risk management processes shall include methods to model and calculate portfolio cost in low probability circumstances (5% probability, or 95th percentile) and shall, on no less frequently than a quarterly basis, monitor this cost against a tolerance threshold equal to a 10% increase in procurement costs. In the event that the calculated portfolio cost at the 95th percentile exceeds the tolerance threshold, SCPA management will be notified and corrective action will be taken to reduce this cost to a level at or below the threshold.